COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

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What of the Outlying Districts?

IT IS going to be difficult to explain to the average citizen why the operators of the old Central Competitive Field are so determined that the operators of the outlying districts shall not have a direct voice in making the next wage agreement for the country. The spectacle at Chicago last week of operators divided into a dozen "camps" but with practically all of the men representing the "four-state" region clinging together on the one issue of keeping others out of their councils raises all the questions to which Harry Taylor, of Kansas City, and C. H. Jenkins, of Fairmont, gave voice at the joint conference.

Why should producers of less than 50 per cent of the country's soft-coal tonnage set a scale which others with no voice in the setting must follow as best they can? Why is it not possible for a basic price on mine labor to be established for the whole country, with legitimate variations by districts—as the price of nails was once fixed? Why cannot a joint national wage board make adjustments of labor scales in districts hard pressed by non-union competition so that those districts can meet that competition on something like even ground? It might be arranged in some industries, why not in coal?

The average citizen hardly appreciates the strength or arrogance of the United Mine Workers of America. He hardly realizes how necessary it is for cohesion and unity of purpose among whatever operators are to deal with that union. He may not know, even after the exhibits of Cleveland in August and October, that it is always difficult to unite the operators even of a single section of the country on any program and that marshaling the operators of the whole United States to present a solid front seems impossible. He is too ignorant of the intricacies of coal diplomacy—spare the word!—to understand that the longer the operators' front, the greater the number of weak spots and therefore the easier it is for a powerful union to segregate the groups and pick off the softest of them when any emergency arises.

As for varying wages from a national basic rate, the experience of the past is sufficient indication of what would happen at every operators' effort to *reduce* a district level. The United Mine Workers of America would rather close up a union field than reduce its wage to compete with non-union territory. Its principal effort would be to unionize that competing open-shop territory—barring obstacles such as the injunctions granted by Judge McClintic against organizers in the southern West Virginia regions. And could any joint body of union miners and operators make district adjustments on a scientific basis? Wouldn't it invariably be merely a test of strength?

Even though some impossible proposals were made by the outlying districts at the Chicago conference, not all the seed planted there fell on barren soil. Proposals for the creation of closer communities of interest among operators won attention. Suggestions for the establishment of various services of mutual value to operators throughout the land caused more than one delegate to say: "What that really means is: The National Coal Association ought to be stronger." And perhaps the National Coal Association *is* stronger in certain minds because of the thought which some of the Chicago discussion provoked. Perhaps an element or two of a better national consciousness in the industry was introduced.

The participants in the Chicago conference seem to have appraised aright the functions of the new coal commission in relation to their difficulties. That is to say they are not counting on that body to solve their mutual problems of a wage scale to replace the contract now in effect. The coal commission is the ear and voice of the public. It is not even indirectly charged with the problems facing the joint conference of miners and operators.

The commission will, however, be much concerned over the failure or success of this joint conference in preventing a strike in 1923. The public is looking to the commission to tell it the facts about the situation. There is no more serious or important responsibility imposed on Mr. Hammond and his associates than this, particularly because it calls for the exercise of judgment, the picking of the wheat from the chaff, even before the commission will have had opportunity to familiarize itself with the huge task that confronts it.

Shall We Weep or Think?

IT IS seldom that so much plain talking, straight thinking and common sense about coal are found in one place as in an editorial article in the November *Survey Graphic*, entitled, "What Lies Before the New Federal Coal Commission." It is all the more surprising that such a broad statement, which, while directed at the commission as suggestions and advice, may be taken to heart by all interested and connected with the subject, should be found in this publication. Perhaps the answer is found in an editorial in another part of the same paper, where in respect to the coal commission and its work it is noted: "Or shall we too try to use our minds—the thinking part of our minds, not the weeping part, not the merely emotional parts, not the merely volitional parts? Shall we try to understand our way through this coal problem? It might be the beginning of the new age."

The *Survey* must be using the thinking part of its mind, not the weeping part. It is a good sign. It is good advice also that the *Survey* suggests to the commission—"devoting more effort to disclosing wastes than to running down profiteers, more thought to laying foundations for peace and a stable supply of coal than to finding who shot somebody in Mingo County."

We would like to emphasize by repetition two main thoughts conveyed in that article. They are that "the

most useful result to be hoped for from the commission's labors is the formation of an intelligent public opinion. Until the public conscience is awakened to its responsibilities toward coal and the public mind informed on the issues involved, there can be little progress toward a permanent settlement." The other is that "the country is looking to the commission not only for findings of fact but for leadership."

The public conception of this commission is that it is going to stop strikes and lower the price of coal. It can do neither. It is to be hoped that it will clearly analyze and declare the causes of strikes and explain how and why the coal consumer's dollar for coal is distributed. It is not an administrative body and it cannot apply such remedies as its searching may suggest. But it can and most certainly will give the public the chance to see that these remedies are given a fair trial. If the public is taken into the confidence of the commission and is prepared for its conclusions, if the rank and file of the contending parties—the operators and miners—have partaken of the deliberations and they too are led and help lead in the direct and proper way of thinking, then all together this country may apply that better understanding, drop sentimentality and get somewhere on the coal question.

It is a helpful sign that the *Survey* dries its tears and recommends thinking.

Why Wonder?

JUDGMENTS are relative. They are based not on the facts themselves but rather on comparisons with the usual or with what in our lack of systematized and statistical knowledge we regard as usual. We cannot demand of anyone or any industry to be much better than the normal. We waste our time if we try for perfection in one place while in another grosser imperfections exist. Yet in many cases the self-appointed judge, the public, all unknowing, is not one whit better than the culprit that it judges.

The Fact Finding Coal Commission, representing in its august person the American public, will do well to keep in mind this important fact lest it condemn the coal industry for faults which the public both within and without industry has in common with it. In fact, unless the commission has a chart to guide it, it may go grievously astray by failing, as most of us do, to evaluate rightly just what is usual and what unusual. In this no reference is made to moral obliquity, for no industry is justified in breaking the law. Only such matters as overcapitalization, overmanning, irregularity in operation, inefficiency, waste and the frequency of accidents are referred to in these reflections.

It might be well to elaborate on the last and see if the hands of the public are so clean that they can rightly assail the coal industry. On the face of things the showing of the coal industry is bad. About 2,000 lives are lost per year in the coal mines of the United States. Everyone understands that some lives must be lost in industry and elsewhere, inevitably or as a result of carelessness, but why so many in coal mining?

The Committee on Public Accident Statistics of the National Safety Council, in a pamphlet entitled "The Trend of Public Accidents," declares that 76,000 lives were sacrificed by "accidents" in 1920. Would anyone imagine that it was anything like as many? Our idea of the usual, that usual on which all our judgments are unconsciously based, whether we know it or not, evidently is erroneous. It is necessary that we be given a yardstick as a basis for our calculations or we shall go grievously wrong.

Do we know, for instance, that the fatal accidents from falls throughout the continental United States were 12,557 in 1920 and that automobiles killed 11,067, each considerably over 30 per day? Do we know, for example, that 8,088 people died of burns and 7,769 from railroad accidents? To put it another way, almost as many people throughout the United States are daily killed by falls and automobiles as perished recently in the terrible explosion at Spangler.

To shift to another phase of the same subject, it is altogether likely that the commission will frame a more effectual indictment, based this time on a comparison and therefore more capable of sinking deeply into the public consciousness. If it does not it will be unlike every other body of inquirers that has canvassed the coal situation. It will compare the record of the mines of the United States with those of Great Britain and other European countries. The comparison, at first sight, is one calculated to make the coal industry squirm, for the European accident figures are much below our own. In 1920 the fatality rate in Great Britain was 0.88 per thousand employees and in the United States it was 2.98, or roughly three times as many.

The rate per million tons of output, it is true, told a different tale. It was 4.60 in Great Britain and only 3.51 here. But stress inevitably will be laid on the loss per thousand lives, forgetful that in America a larger percentage are exposed to hazards than in Great Britain and that the hazard of actual coal extraction is comparable to that which menaces trainmen in railroad work. It is the real hazard of the mine as is train service in railroading.

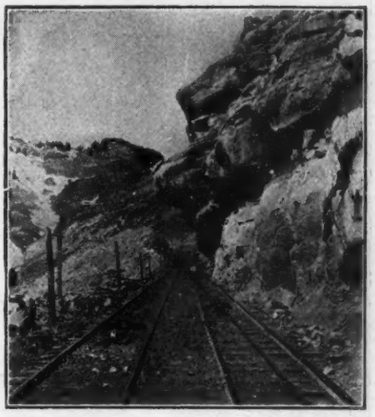
As, however, no reference to the tonnage per fatality or to the fatalities per million tons are likely to move the public and as the other consideration is a technicality too puzzling for the man who wants his thinking made easy, it would be well to refer again to "The Trend of Public Accidents" and learn from it that we "have in this country nearly 37,000 accidental deaths in excess of what we would have if the accident experience of England and Wales were to prevail here" and that "in proportion to population the United States reports nearly twice as many accidental deaths as England and Wales. The mortality from falls, transportation and vehicular accidents and burns is greatly in excess of that prevailing in the older country. The railroad accident death rate of the United States is more than four times that of England and Wales! Automobile accidents in the United States show more than twice the death rate in England and Wales! Four times the number of fatal street-car accidents and injuries!"

Clearly then, it is only the British, or rather the European, and not the American public who can criticise our mine death rate, for it is merely a reflection of our general attitude toward safety.

When the Fact Finding Commission makes its report and points out how much greater is the death rate in mining in the United States than in Europe we hope that it will add with all due emphasis that all fatality rates in industry and public life have a similar trend, that intoxication of action or some other characteristic makes the American venturesome beyond most others of his kind and exposes him to sudden death. Why wonder that what is found true in all other walks of life is true also in mining?

Wire Rope Is Tough, but Faulty Installation and Careless Operation Quickly Destroy It*

By J. F. Howe†
Worcester, Mass.



Reverse Bending and Overlaying of Laps Are Costly—Frequent Inspection of Rollers Profitable—Relation of Drum to Rope Diameter —Where Wear Is Severe Large Wires May Be Used Exteriorly

ALMOST every coal mine is using haulage systems of one sort or another. Where the grades are light and electrical power is available, wire rope is not employed. When the grades are steeper, however, rope haulage is found to be more economical than electric traction. Two general systems are employed: (1) Endless and (2) tail-rope haulage.

The endless-haulage system consists of a rope with the ends spliced together and actuated by wrapping it several times around a pair of drums driven by either steam or electricity.

The tail-rope haulage system consists of two separate ropes, one a head rope attached to the load to be pulled and the other the tail rope which is attached to the rear end of the load. This latter rope is used to pull the empties back into the mine.

In the endless-rope system, grips are employed to attach the mine cars to the rope in groups of one, two or three cars, several such groups being thus attached. As fast as the coal cars are emptied they are connected to the return side of the system by grips and are hauled into the mine by the same rope that pulled them out. One or two men at the mine entrance with a similar number of men in the mine attach and detach the cars. Endless ropes up to about three miles long and ranging in size from ¾ in. to 1¼ in. in diameter are frequently found. The rope construction usually employed in sizes from ¾ in. to 1⅛ in. inclusive is known as "haulage rope" and consists of six strands each of seven wires wound around a hemp core.

The grade of rope used depends largely on the friction, or wear, to which it is exposed. Crucible, extra-strong crucible and plow steels are ordinarily used.

For sizes as large as 1¼ in. the construction is frequently modified from the 6x7 to what is known as 6x19 Seale Patent, this depending on the size of the drums and the bending to which the rope is subjected.

For the driving mechanism the best practice is to thread the rope around the two drums in an elliptical path. This prevents any reverse bending of the rope, which is a bad feature and which should be avoided wherever possible. At some places where the design was originally not sufficiently liberal to prevent slipping, the rope is threaded from drum to drum in the form of a figure eight, but this way of obtaining a large contact of rope with the drum and greater frictional stress is destructive and shortens the life of the rope. It is not to be recommended. Each groove of one of the two drums should have a slip ring so that the tension may be equalized and the accumulation of strain on the ropes while passing around the drums may be prevented.

On endless-rope systems the customary practice is to use regular lay rope, because this is more readily spliced in a satisfactory manner and can be operated with less trouble for that reason.

Drums for endless-rope systems will give good results if proportioned to the diameters in Table I.

TABLE I—RELATION OF DRUM TO ROPE DIAMETER, ENDLESS ROPE HAULAGE

Rope Diameter, Inches	Drum Diameter		
	6x7 Rope	6x19 Seale Patent	Regular 6x19
¾	5 ft	4 ft. 6 in.	4 ft.
⅞	5 ft. 9 in.	5 ft. 3 in.	4 ft. 8 in.
1	6 ft. 6 in.	6 ft.	5 ft. 4 in.
1–⅛	7 ft. 6 in.	6 ft. 9 in.	6 ft.
1–¼	8 ft. 3 in.	7 ft. 6 in.	6 ft. 8 in.
1–⅜	9 ft.	8 ft. 3 in	7 ft. 4 in.
1–½	10 ft.	9 ft.	8 ft.

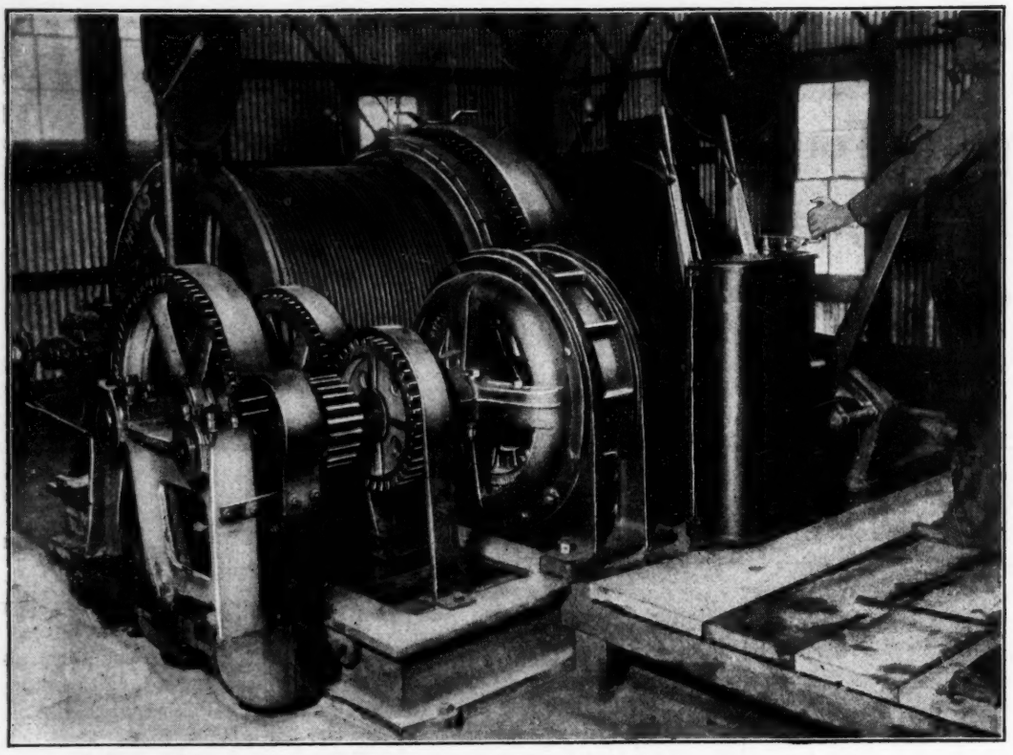
The figures in Table I represent practice in successful systems and coincide with theoretical values for low bending stresses. A suitable number of wraps of rope around the drums is necessary in order to produce sufficient friction to drive the rope. If the diameter of the drum is reduced, then it becomes necessary to use more turns to obtain the tractive effect or to increase the tension on the rope by adding to the counterweight. This method of increasing the tractive effect is not advisable if it increases the load so that the safety factor is reduced below what should be considered safe practice—i.e., 6 or 7. It will be found that the splices hold much better if the tension is not too severe.

In the tail-rope system two drums are employed, one for the head rope and the other for the tail rope In general, the head rope is the larger of the two, for it has to pull the loads up out of the mine and the tail rope has only to let the empty cars down the same grade.

In a few cases where the grades are reversed the tail rope is made as large as or larger than the head rope. In the tail-rope system, particularly when the distance to be traversed is long, the rope frequently has to be

*First instalment of an article from a paper entitled: "A Discussion of Wire Rope as Applied to Mining Operations," read at the autumn meeting of the Rocky Mountain Coal Mining Institute, Glenwood Springs, Col.

†American Steel & Wire Co.



Grooved Drums Save Rope

In the illustration the unoccupied grooves show on the left-hand drum. Where the angle of approach is not greater than 1½ deg., the rope winds into the groove practically without friction except for the slight wear on the sides of the channel and this is always far less damaging than the abrasion of a rope winding against the rough surface of the rope of the preceding turn, as it always does when the drum is flat. The grooves maintain a clearance between turns of at least 1/16 in.

wound from four to ten layers deep on itself. The drums should be as large in diameter and as wide as possible to reduce this overlaying of the rope on itself, for when it occurs the effect on the rope is quite destructive. It is of great importance, also, to see that every layer of the rope winds smoothly and evenly on the drum, for if it starts to wind unevenly, the wear on the rope is increased materially and the rope may be injured at some one point as the result of its becoming wedged between the layers on the drum. It is therefore necessary in the installation of a new rope on such a system to see that from the outset it winds smoothly and evenly on the drum. If this is done the rope usually will follow its original winding and give no further trouble. If it does not, however, the life of the rope will be materially reduced because wear will set in at some one spot.

In using a tail-rope system the proper arrangement of supporting sheaves, turn sheaves, rollers and idlers is quite important. The upkeep of these will in a large measure determine the life of a rope. Wherever crossovers exist, for instance, suitable means should be taken to prevent the rope from coming in contact with the steel rail, because the rope, though hard compared to the face of the rail, contains a much smaller metallic section and consequently a slight wear of the rope from such friction involves the user in an appreciable loss.

In coal mines particularly lumps frequently drop off the cars onto the track and clog the rollers or at least prevent them from turning freely. Whenever a roller ceases to rotate it is rapidly worn by the rope and in turn will wear the rope. I know it is a difficult matter to keep every roller on a system of any considerable length always in condition so that it will turn when the rope comes in contact with it, but suitable supervision and regular inspection will eliminate the chronic cases which would otherwise produce bad results and excessive rope wear.

A few words with regard to rollers may not be out of place at this time. They should be light enough that they will start turning when the rope comes in contact with them. Some prefer chilled cast-iron, but others use wood. When the bearings of a roller get out of line due to wear or improper support it tends to bind and refuse to turn with the rope. A suitable frame with bearings rigidly attached and accessible for oiling, repair or renewal is a fundamental requirement. As far as possible, it should be designed so that dirt or material that may fall from mine cars will not cause it to clog.

Rollers should be wide enough so that the rope will stay on them. Where they are too narrow the rope jumps off them and rubs over the sides of the rollers or their bearings and suffers wear accordingly.

One type of roller for which special merit is claimed consists of two portions which taper toward the center. They are, of course, mounted on a spindle. The rope with such a roller always tends to travel toward the center, and here is placed a hardened steel sheave which will start up instantly when a moving rope comes in contact with it. A liberal bearing on the spindle reduces the wear to a minimum. Such a roller must be carefully lined if the best results are to be attained, but nevertheless this roller has its advantages, for its central sheave, being light, prevents wear of both rope and roller. It has been tried out in the South African mining fields and has been regarded with much favor. Operating tests of it are being made in this country.

Judging by the general experience of rope manufacturers and mining engineers, a more intensive study of the design of mine rollers would produce results of value to both. The bearings on rollers as a rule are not designed for the speed at which they will be run.

All that has been said about the rollers with the tail-rope system applies with equal force to those used with an endless rope, but with the latter the action and wear of the grip should be considered. It is important also that the grips be bell-mouthed on both ends so that there will be no sharp corners where they come in contact with the rope. Grips also should be smoothed out so that there will be no rough spots when a new grip is

put on. Such rough surfaces cause rapid wear on a rope, which does not stop until the grip has been worn smooth. The rope will always slip a little when the grip is applied or released. Summing up, the main need is to reduce the friction on the rope as far as possible, because friction means wear, and wear means shortened life.

In the tail-rope system the wear on the rope always is greatest on the end that is attached to the cars, for it is that end which travels the greatest distance and comes in contact with the largest number of rollers. It is the usual practice at mines employing the tail-rope system to cut off at regular intervals between 1,000 and 2,000 ft. of the end attached to the cars and to splice a new piece of equal length in at the drum end. This keeps the tail line in good condition. Another method is to use a head line for a certain period, then switch it over and splice it into the tail line, putting a new rope on the head line.

It is an open question which is the better of the two systems of haulage, endless or tail-rope haulage. The tail rope is of course intermittent in operation, and the number of cars in each trip will run from forty to sixty.

The ropes employed for head lines usually are $\frac{3}{4}$ in., $\frac{7}{8}$ in. or 1 in., and for tail lines, $\frac{1}{2}$ in., $\frac{5}{8}$ in., $\frac{3}{4}$ in. or $\frac{7}{8}$ in. Head lines may run up to 10,000 or 12,000 ft.; the tail lines from 20,000 to 24,000 ft. Branch tail lines are used in entries further to enlarge the sphere of operation of this system.

On outside inclines, the pitch of which usually is fairly steep, ropes are employed ranging from 1 in. to $1\frac{3}{4}$ in. in diameter. In this case it is frequently found that a rope of a special construction will give better results than the ordinary 6x19 hoisting rope, for in this instance the important condition to be met is the wear on the rollers and not, as with a rope hanging in a vertical shaft, only the stresses due to the bending and the frictional wear at the drum and head sheave. Consequently, on an incline a rope should be made with wires of somewhat larger cross-section than are used in a rope for a vertical shaft. As such ropes are special, the mine that uses them must always carry a spare rope on hand ready for installation, for manufacturers are not likely to carry such ropes in stock.

There are, doubtless, many inclines where an improvement in rope service could be obtained by a close study of the conditions of operation. Certain points with regard to wear on ropes always should be borne in mind. The softest material used in rope manufacture (excluding iron, which is not now used in the construction of ropes for mines) is crucible steel. If we grade rope materials in accordance with hardness or wearing qualities, they are as follows:

(1) Crucible steel	"H" or soft
(2) Extra-strong crucible steel	"HH"—medium hard
(3) Plow steel	"HHH"—hard
(4) Monitor or improved plow steel	"HHHH"—very hard

Plow steel and monitor grades are coming into use more and more for inclines and haulages, because these ropes have maximum wearing qualities.

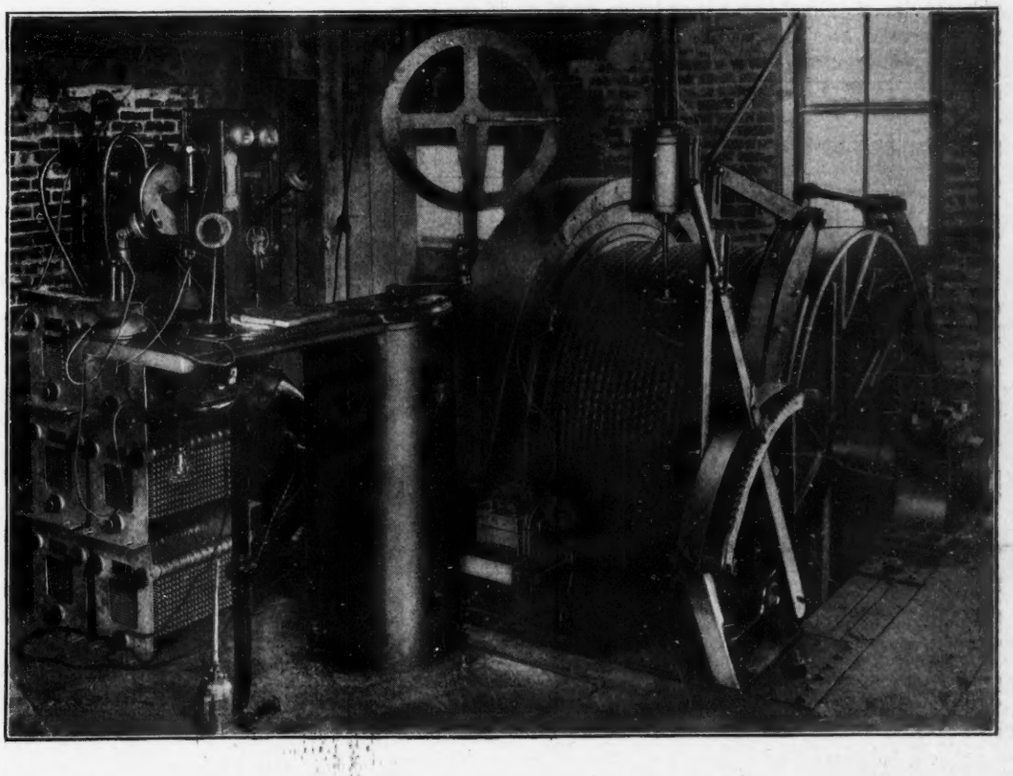
In foreign practice it is customary, after deciding on the size of rope, to calculate the construction which will give the best service in this diameter, and then proportion sheaves and drums to fit the size and character of rope. American practice, however, differs from this, as it proportions the sheaves and drums solely to the diameter of the rope. On haulages the drums as a rule should be designed for ropes of six strands of seven wires; on inclines and shafts, for ropes of six strands of nineteen wires, or some modification of nineteen wires such as in the Seale patent rope.

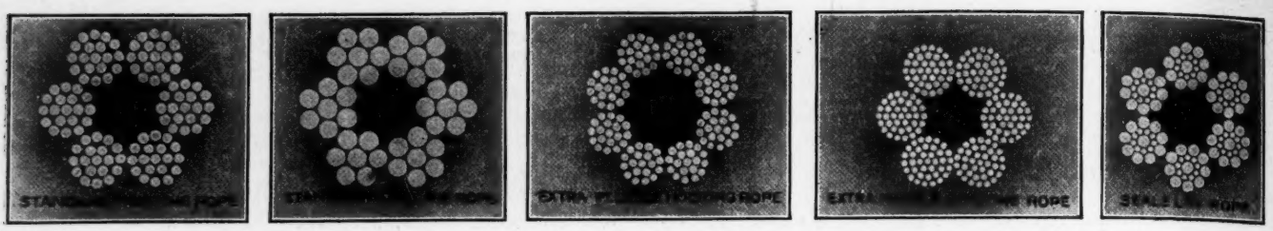
In considering ropes for shaft use, the term "shaft operation" will mean the raising of mine material to the surface either vertically or on what might be termed a steep incline. If the incline is less than 45 deg. it probably would be termed a slope; if more than 45, it would be termed a shaft.

The condition on a slope is identical to that on a gravity incline except that the load has to be pulled up in-

Overlaying Shortens Rope Life

By winding one layer over another a small hoist drum can be used, but the movement of one piece of rope on another will cause unnecessary wear and even injury to both. In a case of the kind illustrated here the only factor to justify so much rope on the drum is that the cost of a drum of proper size might overbalance the saving made in prolonging the rope's life by proper winding.





CROSS-SECTIONS OF FIVE DIFFERENT MAKES OF HAULAGE AND HOISTING ROPE

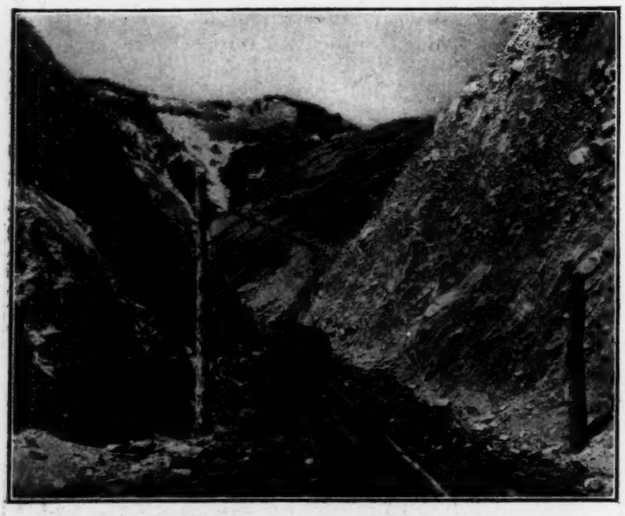
Haulage rope in general must drag along the ground and over rails and ties and occasionally over rollers that obstinately refuse to turn. The result is excessive wear and to provide that under this action the outer wires will not break too readily they are made of larger diameter than with hoisting rope. This destroys their pliability and injures them when they are passed around drums or sheaves, especially when these are of small diameter. The rope on the right has the wearing qualities of the haulage rope and some of the pliability of the hoisting rope. It wears down more than the other rope without indicating it by broken wires.

stead of being lowered. As on a gravity incline so also on a slope, a rope of special construction that will afford maximum wear frequently is needed. Even more careful attention should be given to the rollers on a slope or gravity incline than is necessary on a haulage system, for the speed usually is greater, and a roller either worn or refusing to turn would soon wear the rope out.

In a shaft operation the conditions which govern the life of a rope are the size and location of the sheaves and drums, the load hoisted, the speed of the hoist, its acceleration and such local conditions as corrosion by mine water.

As a rule the drums employed for shaft hoists are much larger than for any other type of operation. There are several reasons for this: In the first place, it is desirable to have the rope wind on the drum in one layer, because when so wound it is not subjected to the wear and crushing which is inevitable where overlaying is permitted. Where the shaft is deep, this, of course, requires a drum of large diameter as well as considerable width. It also is desirable that the drums be grooved to fit the diameter rope to be used, the grooved drum giving a support to the rope which a flat drum does not.

Furthermore, the grooved drum assists in the winding of the rope evenly across the entire width. If conditions are such that a rope must wind on a hoisting drum in more than one layer, it should be borne in mind that the service obtained can never be as good as if the overlaying could be eliminated. Extra wear usually comes where the rope starts to make the overlay, due to the slap as the direction of wind is reversed.



A TEN-THOUSAND FOOT HAULAGE ROAD

With a long rope haulageway such as this of the Lion Coal Co. in Utah it is important that the rollers and sheaves be set in line and made easy turning. Otherwise, as the rope has to travel so far and is so heavy, the wear will be excessive. Where the sides of the roadway are steep and even overhanging small stones may fall and block the rollers. Another view of this scenic roadway can be seen in the headpiece.

Drum or sheaves to be used in shaft mining should be of at least twice the diameter designated in the trade catalogs, for such literature must cover a wide range of uses, and although the sizes recommended are larger than are used in some places, they are smaller than those usually obtaining at mining operations. A rule that is used abroad to a large extent is to base the diameter of the drum or sheave upon the diameter of the wire in the individual rope, the practice being for rope of 1½ in. diameter and 6x19 stranding to use a sheave or drum not less than 7 ft. in diameter, that size corresponding to about 800 times the diameter of the wire. This minimum, however, is not considered good practice. The value of 1,000 times the diameter of the wire corresponding to a sheave or drum diameter of 8½ ft. is considered desirable and an even larger one corresponding to 1,200 times the diameter of the wire would be preferable if it could be arranged. This would mean a sheave or drum 10 ft. in diameter. I think the practice in the United States frequently is to use larger than this, drums and sheaves up to 12 ft. in diameter being used for 1½ in. 6x19 rope.

TABLE II—PROPER DRUM DIAMETER FOR 6x19 ROPE

Rope Diameter, Inches	Drum Diameter, Feet	Rope Diameter, Inches	Drum Diameter, Feet
1	8	1–⅝	13
1¼	9	1–¾	14
1–¼	10	1–⅞	15
1–⅜	11	2	16
1–½	12		

Sheaves or drums of large diameter will lengthen the life of rope by decreasing the bending stresses to which it is subjected. Where the drum or sheave is too small, wires begin to break and when a certain number have broken it is necessary to remove the rope. With a large drum or sheave the rope wears out slowly and has a far longer life.

Did Not Have Bureau of Mines Approval

H. FOSTER BAIN, director of the U. S. Bureau of Mines, corrects the statement taken from the report of the official investigator of the explosion at No. 4 Mine of the Canadian Collieries, Ltd., and quoted on page 669 of the Oct. 26 issue of *Coal Age*, to the effect that the coal-cutting machine in the workings where the explosion took place was of a type approved by the U. S. Bureau of Mines.

He states that "the Sullivan Machinery Co. advise that this was a totally enclosed machine of a type especially built for use in foreign countries and in Canada, and differing in design from the Sullivan machines approved by the Bureau of Mines. The company further advises that this equipment did not bear the Bureau of Mines approval plate, which indentifies all permissible equipment approved by the Bureau."

How to Make Babbitted Bearings That Will Last Long And Run Cool and Smoothly

Dried Clay Solution on Mandrel—Ladle with Round Spout Preferable —Avoid All Dampness—How to Gage Correct Temperature—Casting Base and Cap in One Operation—Providing Oil Holes and Grooves

BY GUSTAV H. RADEBAUGH*
Urbana, Ill.

BABBITT metals are divided into three classes: (1) Alloys of tin, antimony and copper; (2) alloys of tin, antimony, coppper and lead, and (3) alloys of tin, copper and zinc. The name "babbitt" is derived from that of the man who invented the lining of bearings with soft metal, Isaac Babbitt. The term "babbitting" has been applied to the process of applying soft anti-friction metals inside a hardened shell for the purpose of producing a smooth and cool-running bearing.

Babbitt metal is extensively used. It can be purchased from most dealers in machinery and from repair or jobbing shops. It is marketed in the form of small blocks or pigs. One of the difficulties in the use of this metal is the formation of blowholes if the bearing is not properly cast. It has been found that these can be avoided if the mandrel, or shaft, while heated is lightly covered with a solution composed of one or two pounds of Jersey red clay to three gallons of water.

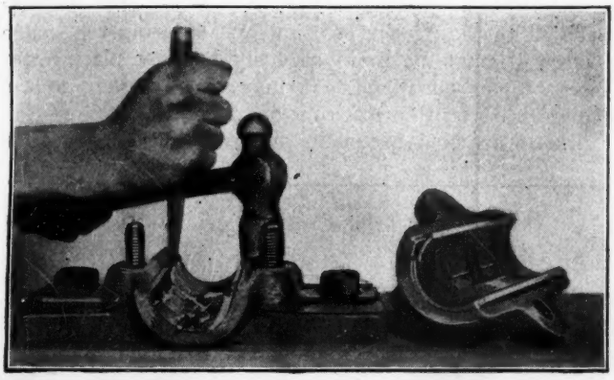


FIG. 1—REMOVING OLD LINING FROM BEARING
A flat cold chisel is driven into each side of the box between the babbitt lining and the cast-iron shell, thus causing the former to break loose. Oftentimes it will be removed in a single piece.

This will prevent the formation of bubbles and the lining, in consequence, will have a smooth surface. Oil causes the babbitt to blister.

It is important that the metal always be poured from a ladle that has a rounded spout rather than one that is flat and sharp, for the latter tends to produce a porous area or blowholes in the solidified metal. Putty is preferable to clay for luting or sealing the ends and sides of the bearings, as the moisture in the clay tends to cause sputtering. Exercise caution when pouring babbitt into a box; be absolutely certain that the inside of the box is dry. If damp it causes the heated metal to sputter and sometimes it explodes with force enough to scatter molten masses and particles over a wide range.

*University of Illinois.

Prior to pouring the babbitt the bearing should be heated to prevent the molten metal from becoming chilled and sluggish. The common method of determining the pouring temperature of babbitt metal is by

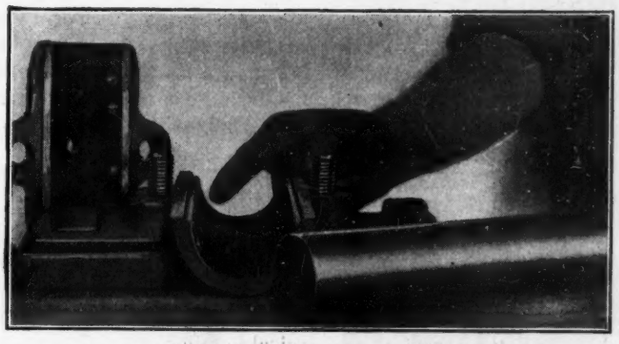


FIG. 2—ANCHOR HOLES KEEP BABBITT IN PLACE
If no anchor holes have been provided they should be drilled and if the babbitt has not come out of them when the lining is removed care should be taken to see that they are clean so that the new lining will not slip.

testing it with a dry pine stick. If it chars the wood, the metal is at the correct temperature for pouring. Never heat the babbitt to red heat. This will destroy its usefulness. When heating the babbitt in a forge fire be careful that none of the metal is scattered in the fire, for it will find its way to the tuyere iron and close up the blast openings.

The old babbitt is removed from bearings by taking a flat cold chisel and driving it into each side of the box between the babbitt lining and the cast-iron shell. The old babbitt will break off in the manner shown in Fig. 1. This is not a difficult operation, as in many cases

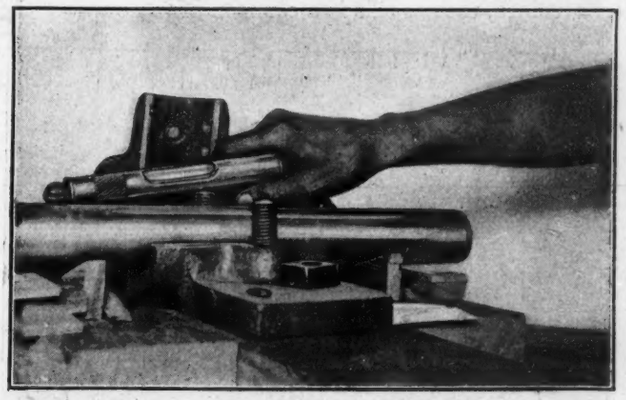


FIG. 3—LINING AND LEVELING MANDREL, OR SHAFT
Small wedge blocks bring the mandrel up to position. When that is done flat blocks are placed under each end and paper shims are used to give the final adjustment. Without care in this operation the center line of the shaft will not be identical with that of the box.

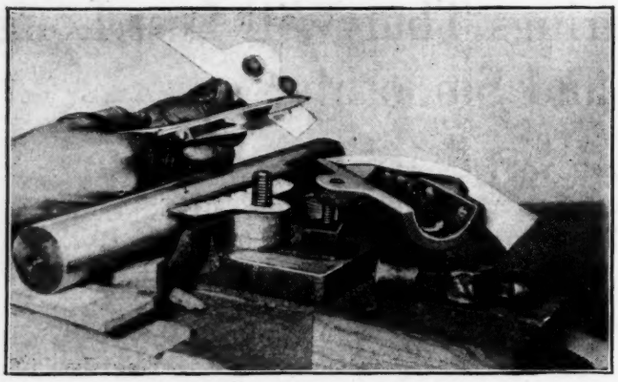


FIG. 4—CUTTING LINERS TO SEPARATE BASE AND CAP
Liners are shaped so that they will fit over the bolts. Small notches are cut along the inside edges of the liners so that the babbitt poured into the cap will run down and fill the base, without, however, making such a bond between them as will make separation thereafter difficult.

the entire piece of babbitt is removed intact. The old metal can be remelted and used again. If the box is covered with oil and muck, place the base and cap in the forge fire and heat it until the oil burns off.

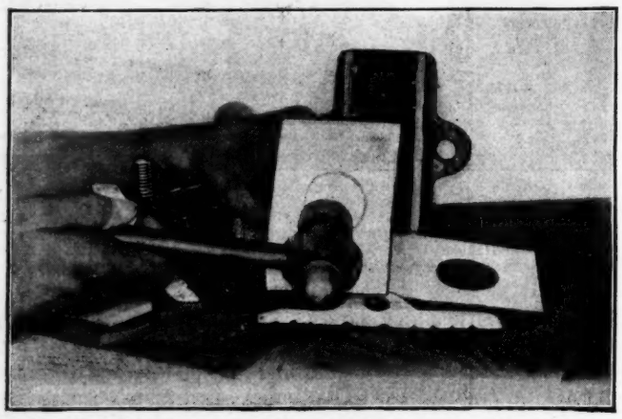


FIG. 5—PAPER ENDS KEEP BABBITT FROM CLAY DAM
Babbitt when it comes in contact with moisture creates steam so rapidly as to cause what is tantamount to an explosion. After every care has been taken to keep out water and to dry the bearing completely it would be thoughtless to let the babbitt come in contact with clay or putty, as an explosion, or at least blowholes, would result. The paper ends serve as a protection.

The anchor holes in the base and cap of the box are shown in Fig. 2. These anchor holes are used to hold the babbitt lining in place. Cast-iron shells are rarely ever tinned, though this is a common practice where the

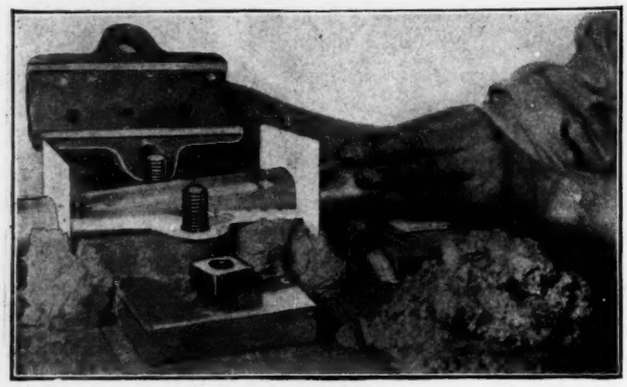


FIG. 6—PLACING THE PAPER LINERS IN POSITION
Before these liners are placed the cast-iron box is heated so as to make it dry and also help the babbitt to retain its fluidity till it is all duly in place. A dry bearing tends to make a good lining and a job in which no one is burned.

shells are of bronze, like those used for automobile engines. If these anchor holes are not in the box and no other method is provided they should be drilled, as it is important that the babbitt lining be held in place by some such means. When removing the babbitt the anchor holes sometimes remain filled. They must be clean before the shell is reoabbitted. One of the best ways to remove the metal left in the holes is by heating the box in the forge fire.

After the box has been thoroughly cleaned from all

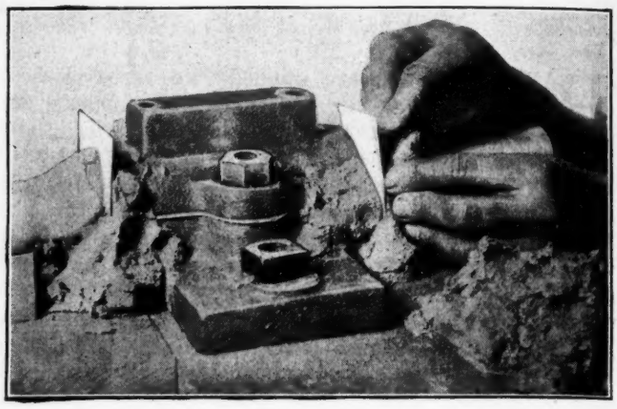


FIG. 7—CLAMP CAP WITH BOLTS; SEAL WITH PUTTY
The bearing is now ready for pouring; liners, clamps, paper ends and clay or putty being all in place and the mandrel properly lined.

loose babbitt, metal and oil, the shaft, or mandrel, is then located and properly lined and levelled. A useful way of blocking it into place is by the use of the small wedge blocks shown in Fig. 3. After the shaft is brought to the proper position by adjusting the wedge blocks, it must be more securely held by placing flat blocks under each end. It may be necessary to use paper shims in this blocking operation.

Liners are constructed to separate the base from the

FIG. 8—TESTING HEAT OF METAL WITH PINE STICK
The babbitt should be slowly heated and to the precise temperature at which the metal will char a pine stick, without actually burning it. Be sure you have enough metal to complete the job. The cast should, of course, be continuous.

cap of the box. By cutting the small notches along the inside edge of the cardboard liners both the top and the bottom of the lining can be poured at the same time. These notches are cut in the manner shown in Fig. 4. They are large enough to permit the molten babbitt to reach the base but small enough that the cap can be readily pried free after the babbitt has been poured and has become cooled.

Paper ends or washers, as shown in Fig. 5, are used to keep the hot babbitt from coming in contact with the damp clay or putty which is used for sealing the ends and sides. These dams are used to prevent the hot metal from escaping. If the hot babbitt comes in contact with moisture it tends to sputter. Before placing the liners, therefore, as shown in the next operation, the cast-iron box should be heated. This will insure a more even flow of the metal.

After the liners have been put in place and the shaft

FIG. 9—SKIMMING SLAG OFF SURFACE OF METAL

Babbitt metal tends to break up into its metallic constituents; therefore to keep the mixture up to standard throughout it should be stirred and the refuse that rises to the top should be carefully skimmed off, taking care, however, that this metallic scum does not get into the bed of the forge, for it will block the tuyere iron and close the blast openings.

properly lined up, the cap is ready to be placed on the base. It is good practice to clamp the cap in position with two bolts, as it insures its remaining in proper location. All the open edges are sealed with putty or clay as shown in Fig. 7. Good luting materials are putty, fireclay or ordinary clay. The bearing cap should be provided with a hole for pouring the metal through and one or two holes to permit the escape of gases. These holes on a bearing such as is shown should be $\frac{3}{8}$ in. in diameter.

The babbitt scrap that has been removed from the box with the necessary quantity of new metal is placed in a ladle and slowly heated until a dry pine stick will char when placed in the molten metal as shown in Fig. 8.

Do not heat the metal to a high temperature. If the metal is too hot the pine stick will fire. It is not good

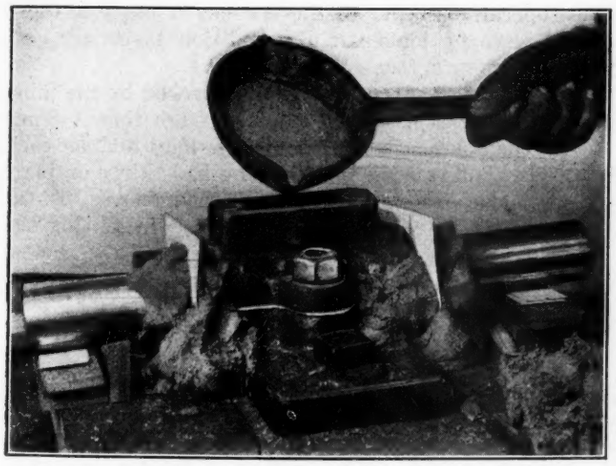


FIG. 10—POURING THE BABBITT METAL INTO BOXING

The bearing cap should have a hole for the pouring of the metal and one or two holes about $\frac{3}{8}$ in. in diameter for allowing the escape of gases. The ladle should have a wide and rounded spout, as shown, if the metal is to be poured satisfactorily.

FIG. 11—BREAKING BOND BETWEEN BASE AND CAP

After the metal has solidified, the clamp bolts are removed and with a chisel the base and cap linings are broken loose from each other. This should be done first on one side and then on the other so that there will be no tendency to loosen the hold of the lining on the cast-iron shell.

practice to leave babbitt on the fire longer than necessary. It should be poured as quickly as it comes to the proper heat. To obtain a serviceable bearing these principles must be closely observed.

Before pouring, the babbitt should be stirred thoroughly to insure a lining of uniform composition. The metals in the alloy have a tendency to separate and seek different levels in the ladle, but the stirring overcomes that tendency. Previous to pouring, the top of the molten babbitt should be cleaned off as illustrated in Fig. 9, taking care that the refuse is not permitted to fall into the forge fire.

The babbitt must be poured quickly. One of the secrets of good bearings is the manner in which the metal is poured into the box. Failures are caused by having the box damp instead of warm, as suggested, by using a ladle with a sharp or flat pouring spout instead of a round spout, by not having the box ends and sides

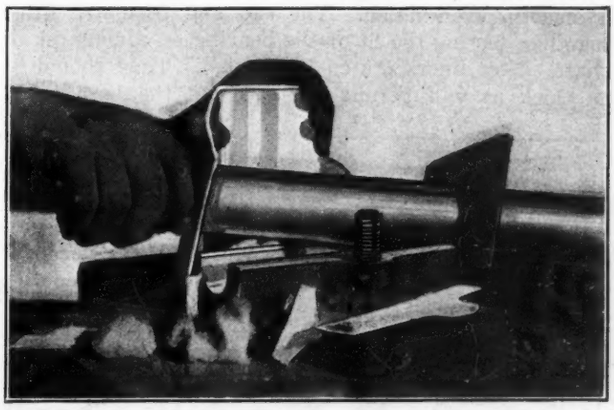


FIG. 12—BEARING SHOULD BE INSPECTED

The cap and mandrel should be removed and the bearing inspected to see if a smooth job has been performed. If not it will be necessary to start all over again, as there is no way of adding metal after the pour has been completed.

properly sealed and by not having enough material in the ladle to fill the bearing.

After the metal has been poured it should be permitted to cool and the cap should not be separated from the base till the metal has hardened. This operation is performed in the manner shown in Fig. 11. The clamp bolts are removed, and a flat cold chisel is driven between the bearing cap and the base. This causes the metal to separate at the points adjacent to the small notches in the liners, where the metal ran down into the

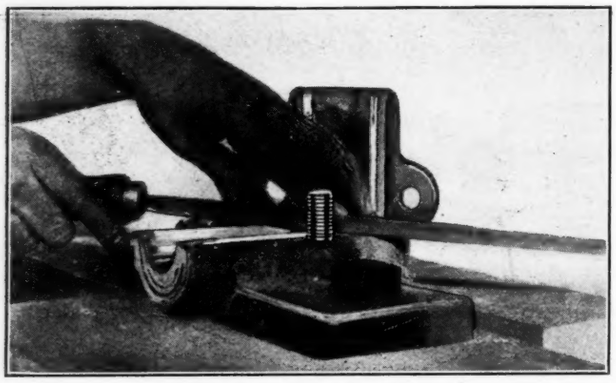


FIG. 13—SMOOTHING BEARING WITH COARSE FILE

All the fins and uneven edges must be removed and the edges trimmed off to a ¾-in. radius. The bearing surface of the babbitt lining is filed and scraped to a smooth, even finish. New liners are cut and so fitted that they will lie snugly against the shaft yet without gripping it.

base of the bearing. This operation should be performed on each side of the box so that there will be no tendency to loosen the hold of the bearing metal on the cast-iron shell.

In Fig. 12 the bearing cap has been removed, permitting the removal of the shaft, or mandrel. A close inspection can be made of the babbitt lining to determine if it will make a good bearing. It should be smooth and free from cold shorts. If defective, the babbitt lining is removed and the pouring operation is repeated.

When pouring a bearing the hot metal runs into the small crevice between the cap and base. This causes the babbitt lining to have fins and uneven edges. These should be removed by using the bastard, or coarse, file shown in Fig. 13. The edges of the babbitt lining should be filed to about a ¾-in. radius. The bearing surface of the babbitt lining should be filed and scraped to a smooth, even finish. The cap and base are fitted together, testing the fit of the bearing on a mandrel, or shaft. New liners are cut and fitted. They should be as thick as will permit the cap and the base to be bolted together with the clamp bolts without binding the shaft. In the cap of the box, oil holes should be provided. Holes used for gas escape are filled with babbitt during the pouring operation and it becomes necessary to remove this metal. One method is drilling with the breast drill as indicated in Fig. 14. Another effective method is to core out these holes with wooden plugs, care being exercised that a free passage for air exists between the plug and the sides of the hole. After the metal cools these plugs are driven out and a clean hole is obtained, thus eliminating the use of the drill.

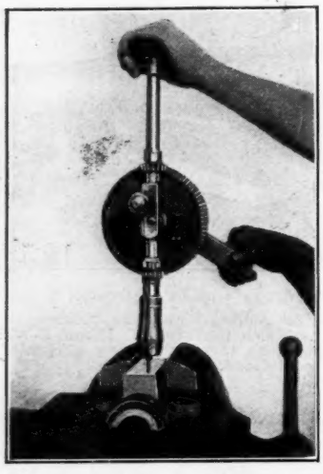


FIG. 14—DRILLING OUT OIL HOLES

Either oil holes must be cored out with wooden plugs before the metal is poured or else the oil holes must be drilled later with a breast drill. Care must be taken in the first case not to core the holes in such a manner as to prevent the escape of the air in the box.

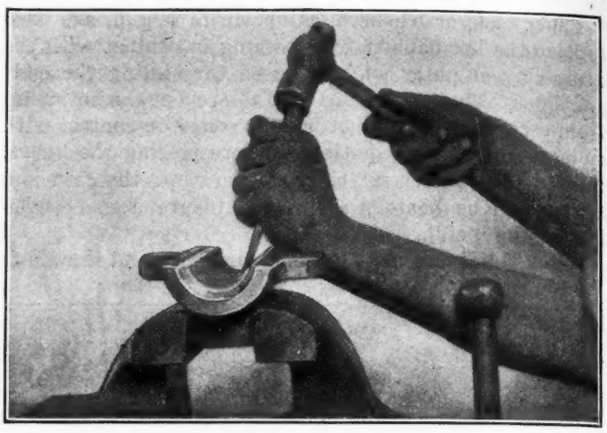


FIG. 15—CHISELLING OUT OIL GROOVES IN BEARING

These grooves are cut with a round-nosed goose-neck chisel and after they are made the bearing is smoothed with a half-round mill file and by scraping. They should be about ⅛ in. deep.

The oil grooves are cut by using a round-nose goose-neck chisel as shown in Fig. 15. After the grooves have been cut, smooth the bearing down with a half-round mill file and by scraping. Grooves are cut in the surface of the bearing so as to distribute the lubricant evenly over the entire length of the journal. They are also cut so that they will collect the oil (which would otherwise run out at the ends of the bearings) and will return it to some point where it may be used again. The usual dimension of oil grooves is $\frac{3}{32}$ in. to ¼ in. in width and $\frac{3}{32}$ in. to ⅛ in. in depth.

Using Rusted Sheet Iron as Side Plates for Chutes in Heavily Pitching Rooms

IN A certain anthracite colliery most of the mining is on the pitch and the grade is such that the car cannot follow the miner as the face advances, but must remain on the gangway. The pitches vary from 12 to 17 deg., so that the coal will not run without the introduction of chutes. These have a sheet-iron bottom and plank usually 2 in. thick on the sides. Thus the coal is carried from the face onto a platform or into the car.

The chutes that were left in the place when operations ceased on March 31 of this year were attacked by the acid water of the mine, with the result that when operations began again on Sept. 11 many of these chutes were no longer in fit condition to convey coal from the mine's face to the car.

Many chutes had been so badly attacked by the mine water that holes had been eaten through them. Some of the chambers are 250 to 300 ft. long and as each iron sheet is 8 ft. long the company had thirty or forty unserviceable iron sheets in each chamber. Just at this time much trouble was experienced in getting the necessary plank to complete the building of the chutes. So the problem was solved by the use of a sheet-iron cutter similar to that used in the breaker. This was brought into the mines and the sheet iron was cut lengthwise and used on the sides in place of plank.

Thus one unserviceable iron sheet 8 ft. long could be cut in two and made to take the place of a 16-ft. length of 2-in. plank. This was a big saving to the company, the only cost being that of buying the sheet-iron shears. Where there were any holes in the sheet iron the plates could be used with the damaged side down.

A Few Suggestions to Those Who Repair Mine Motors

Beware of Incorrect Connections Between Coils and Commutator —Be Sure That Both Bands and Coils Are Snug—Guard Against Bends, Twists and Blows That May Nick or Weaken Wire

By John S. Dean*
East Pittsburgh, Pa.

When the armature of a mine motor is damaged and has to be rewound, it is important that the connections between the windings and the commutator be made correctly. If the windings are not too badly damaged, the winder usually notes the throw of the leads from the coil to the commutator bar when he is stripping the windings, and in this way he gets the desired information.

Entire reliance cannot be placed on this method, as there is a possible chance that the winding may have been connected wrong when it was originally wound, either in the repair shop or in the factory. The only safe way is to get from the manufacturer of the motor this winding information, with a complete diagram of connections such as are shown in Figs. 2 and 3.

To be sure of getting the full life from an armature, extreme care should be taken to see that failure, from whatever cause, is guarded against in a satisfactory manner while the armature is being rewound. First of all, any sharp corners and any roughness in the slots that might damage the coils should be filed down and all chips and filings removed before the insulating material is applied to the core. In applying the insulating material on the coil supports it should be evenly placed and no thin spots allowed.

The coils should fit tightly in the slot and so that the tops of the coils are approximately $\frac{1}{32}$ in. above the outer edges of the grooves. If necessary, fillers should be used between the coils to meet these conditions. With the projection recommended there will be nothing to prevent the bands from being able to press the coils down tightly into place so that the former will rest finally on the iron core of the armature. Thus arranged the movement of the coils in the slots will be reduced to a minimum. If the coils are wound so that they come so high that the bands cannot be tightened enough to bring the coils flush with the iron core the bands will rest on the coils and not on the iron, and when the insulation dries out in service the bands will become loose.

The coils should not be twisted, bent or abused any more than is absolutely necessary to get them into place. Care should be taken not to get the wires or leads crossed in such a manner that when pressure is applied in banding, short-circuits will occur. The coils on the end windings should be down, so as to make a solid foundation for the bands, but care should be taken not to pound them to such an extent that the coils or leads are damaged.

Insulating protecting pieces should be placed at all points where the coils cross and where there is danger of short-circuiting. It is good practice to reinforce the insulation directly back of the commutator. This can be done by weaving braid between the leads or by taping the individual leads at this point.

The leads should be tinned back so far that there is no untinned copper in the commutator neck. The cotton sleeving on the lead should not be allowed to get into the commutator slot, as it may hinder soldering to such an extent that a poor connection will be made. The tool used in driving the leads into place should be free from sharp corners that might nick the leads, for a nicked wire is likely to break.

Mining motors usually are laid out for a wave or two-circuit type of winding. They may be wound with either a right- or left-hand coil. A right-hand coil is one where the leads come out on the right when the coil is held so that the portion to be placed in the bottom of the slot is toward you and the air-gap side of the coil is uppermost. A left-hand coil is one where the leads come out on the left when the coil is held so that the

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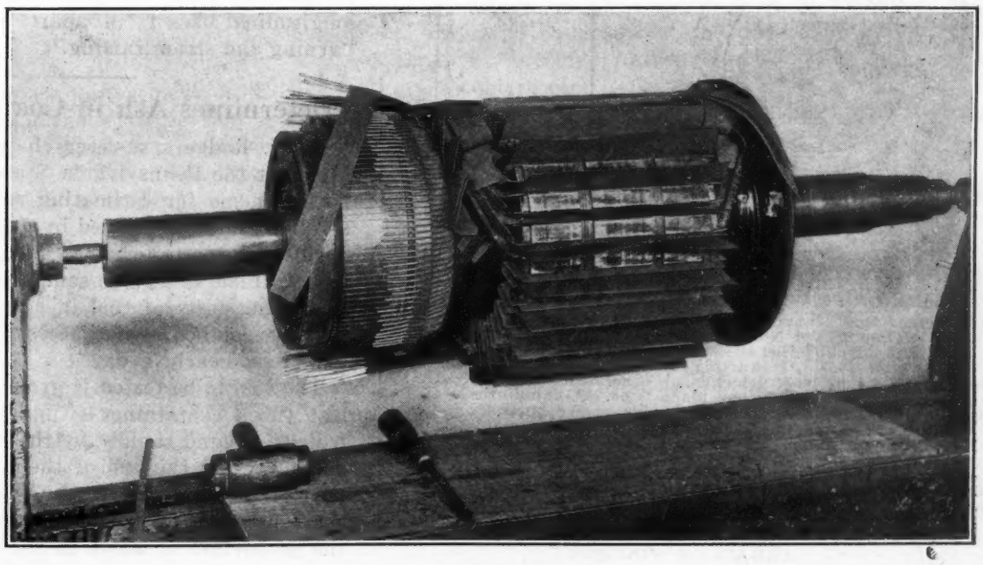
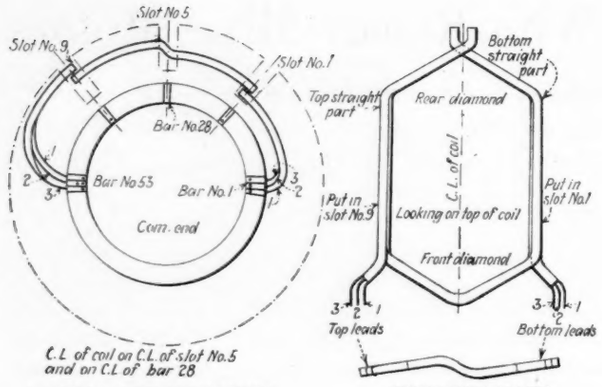


FIG. 1

Armature Under Repair

The coils, properly insulated by their tape windings and by paper strips, are embedded in the core slots to such a point that when the completed job is bound with high-resistance wire the coils will come just flush with the slot opening.



LAYING OFF WINDINGS

(1) The center line of starting coil is on center line of slot No. 5 and on center line of bar No. 28. (2) Starting at bar No. 28 count back (clockwise) to bar No. 1 and in this bar place lead No. 1 from bottom leads of starting coil. (3) Count from bar No. 1 forward (counter-clockwise) to bar No. 53 and in this bar place lead No. 1 from top lead of starting coil.

WINDING DATA

Number of armature slots—35. Number of commutator bars—105. Coils lie in slots Nos. 1 and 9. Leads connect to bars Nos. 1 and 53. Commutator center punched.
.:. Locates top leads of starting coil.
...Locates bottom leads of starting coil.
. Locates starting coil in slots Nos. 1 and 9.

FIG. 2—DIAGRAM AND DATA FOR ARMATURE WINDERS

portion to be placed in the bottom of the slot is toward you and the air-gap side of the coil is uppermost.

Armatures of the two-circuit type may be wound either progressive or retrogressive. A progressive wave or two-circuit winding is one where the throw of the coil lead is one-half a commutator bar greater than half way around the commutator. For example. with 135 commutator bars, a progressive winding has a coil throw of $(135 + 1) \div 2 = 68$ bars or 1 and 69. A retrogressive winding has a coil throw of $(135 - 1) \div 2 = 67$ bars or 1 and 68.

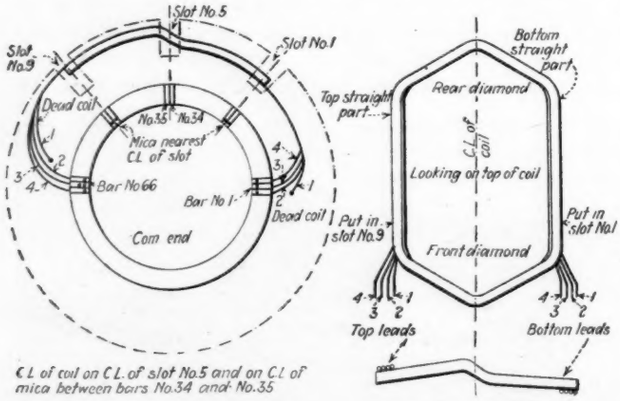
The wave or two-circuit windings always require an odd number of commutator bars. When an even number of coils per slot are used there will always be an idle, or dead, lead. When an odd number of coils per slot are used and there are an even number of slots on the armature there will always be an idle, or dead, lead. When the number of coils per slot is odd and there are an odd number of slots on the armature, there will never be an idle, or dead, coil. The alignment of the armature slots or teeth of the core with respect to the commutator mica or bar is as follows:

(1) With the coil throw even and the lead throw even, the center line of the tooth will line up with the center line of the mica.

(2) With the coil throw odd and the lead throw odd, the center line of the slot will line up with the center line of the bar.

(3) With the coil throw even and the lead throw odd, the center line of the tooth will line up with the center line of the bar.

(4) With the coil throw odd and the lead throw even, the center line of the slot will line up with the center line of the mica.



LAYING OFF WINDINGS

(1) Center line of starting coil is on center line of slot No. 5 and on center line of mica between bars Nos. 34 and 35. (2) Starting at bar No. 34 count back (clockwise) to bar No. 1 and in this bar place lead No. 2, first active coil from bottom leads of starting coil. (3) Count from bar No. 1 forward (counter clockwise) to bar No. 66 and in this bar place lead No. 2, first active coil from top leads of starting coil.

WINDING DATA

Number of armature slots—33. Number of commutator bars—131. Coils lie in slots Nos. 1 and 9. Leads connect to bars Nos. 1 and 66. Commutator center punched on end.
...Locates bottom leads of starting coils.
bottom leads of starting coils.
..Locates starting coil in slots Nos. 1 and 9.

FIG. 3—ANOTHER DIAGRAM AND OTHER DATA FOR ARMATURE WINDERS

Sizes and Uses of British Anthracite

IN HIS little book on "Anthracite and the Anthracite Industry" A. Leonard Summers states that the recognized British standard sizes of anthracite are:

Selected large, for malting, hop drying and horticultural purposes.

Screened large, for export to crush to sized coals.

Machine-made cobbles (2½ in. to 4 in.), for central heating apparatus, Dowson and pressure gas plants, household and various purposes.

Machine-made "French" nuts (1¾ in. to 2½ in.), for practically the same purposes as cobbles and for open grates and large stoves.

Machine-made and washed stove nuts (1 to 1¾ in.), for suction gas plants and the majority of domestic stoves.

Machine-made and washed "pea-nuts" (½ in. to 1¼ in.), for "Economic" stoves and suction gas plants.

Machine-made and washed "beans" (½ in. to ¾ in.), for suction gas plants and domestic stoves.

Machine-made and washed "peas" (¼ in. to ⅝ in.), for suction gas plants and steam raising.

Machine-made and washed grains (⅛ in. to ¼ in.), for specially constructed gas plants and under steam boilers with forced draft.

"Duff," the fine, small dust, for spelter and cement making, chiefly for mixing in small quantity with steam coals for making patent fuel, including boulets for domestic stoves and fires.

"Rubbly Culm," or the rough coal passed between longitudinal bars 1¼ in. apart, principally used for lime burning and steam raising.

Determines Ash in Coal with Milk Tester

A. M. Rodgers, a research worker in the School of Mines at the Pennsylvania State College, has devised a novel scheme for estimating rapidly the percentage of ash likely to be contained in a given sample of coal. By means of a centrifuge such as is used to test the proportion of cream in a given sample of milk, he has succeeded in making tests of coal in a few minutes whereas the previous method, which necessitated the burning of the coal, took nearly a day.

The coal to be tested is ground finely and poured into test tubes containing a liquid. When the tubes are whirled around rapidly by the centrifuge, the slate and sulphur go to the end of the tube and the combustible part of the coal is left near the top. Graduations, like those used in the milk and cream tester, show at once the proportion of waste in the coal.

Kentucky Mining Institute Discusses Loading Machine And Value of Business Associations of Coal Men

Suggested That Loading Machine Be Shifted by Locomotive and That Conveyor Be Made Telescopic, So That Loading Boom Before Operating Can Be Extended and Load Two Cars Without a Shift

THAT when properly managed the coal-loading machine has great possibilities is clear from the statement made by N. G. Alford at the meeting of the Kentucky Mining Institute, at the Seelbach Hotel, Louisville, Ky., on Nov. 3. He stated that the Pocahontas Fuel Co. had loaded with three machines 1,500 tons in one day with a force of men somewhere between twenty-seven and thirty-five, including those actually operating the loaders.

Brisk and businesslike was the meeting of the institute, which did not conclude till nearly midnight of the day of meeting. It had been intended to extend it until the following day, but at the request of some of the members who could not stay so long it was crowded into a single day and the report of the committee on the "Preparation of Coal" was omitted, as none of the members of that committee was at hand to read or discuss it.

The report of the committee on "Coal-Mining Machinery" was delivered by Alphonse F. Brosky, of Pittsburgh. As the subject seemed too large for a single session, the paper was limited in scope to mechanical coal-loading machinery and how it might be used to the greatest advantage. Interest was added to the paper by a number of lantern slides showing the different types of mechanical loaders.

Work of Loading Shovel Is Incomplete

F. P. Wright, of Bevier, Ky., opened the discussion, remarking that he gathered from the paper that mechanical loaders were complicated and cumbersome, and had not been so greatly simplified that the operator would be justified in adopting them as standard equipment. He also said that in the loading of coal by mechanical means more daymen would have to be employed than were required in the actual operation of the machines; otherwise, how could the rooms be cleaned up, fallen posts be replaced, track be maintained, and the many other jobs executed that always accompany room mining?

In reply to Mr. Wright's first remark A. F. Brosky said that we never could hope to develop a loading machine that would have a flexibility approaching anywhere near that of the human loader, but that the loading machine is being made more and more adaptable to mining needs. For the greater part of coal handling, electric power is cheaper than man power. Without question a straight loading machine will never be constructed that can be operated without some of the coal being shoveled in the final clean-up. But if the employment of a few daymen will make unnecessary the services of a far larger number of contract men, the cost of loading per ton will be lowered.

N. G. Alford recited what had already been achieved in mechanical loading at one of the mines of the Pocahontas Fuel Co. His statements seemed to convince the operators present that mechanical loading was far from a complete failure. In one of that company's mines three loading machines are said to have loaded out 1,500 tons in one day. The number of men required was somewhere between twenty-seven and thirty-five, including those operating the loaders.

Asked whether the conditions at this mine favored mechanical loading, Mr. Alford replied that they were exceptionally favorable, the seam being approximately 8 ft. thick. Interrogated by Mr. Jenkins as to whether the coal was soft and the roof unusually strong, Mr. Alford replied in the affirmative. Mr. Cockburn substantiated these statements by saying that few places had more favorable conditions for mechanical loading.

Suitable Time to Talk Motor Standardization

Graham Bright, of the Westinghouse Electric & Manufacturing Co., cautioned designers and manufacturers of mechanical loaders to decide upon a type of motor, preferably standard, and to allot sufficient room before going far in the design of other features, thus saving the great expense of designing and constructing a motor of unusual size and type.

Questioned as to what had been done by his firm to bring out an "explosion-proof motor" he said the term as applied to a motor to be used in a gassy mine is a misnomer. The term "permissible" might be adopted more appropriately. At the present time the demand for such a motor would not justify any manufacturer in spending a large sum of money to develop it. A permissible motor for the driving of the pumps has been available for a period of 5 or 6 years. The design in the early type provided wire-gauze screens to prevent explosions of gas.

Making Electric Motors Explosion-Proof

The Bureau of Mines never would pass favorably on this type of protection, yet at no time and under no conditions could the operation of the motor be made to cause an explosion of the gaseous atmosphere by which the machine was surrounded. The new type of permissible motor is built heavy, with wide flanges. It does not prevent explosions within the motor, but such explosions will not injure it nor extend to the air outside.

On being asked by Mr. Alford as to the most effective means of transporting a loading machine from place to place, Mr. Bright stated that he believed that in most cases the addition of self-propelling mechanism was a mistake. The simpler the mechanical loader the better, and for that reason it might be wise to eliminate the self-propelling devices on the truck and use a locomotive to pull the machine from place to place, providing it could be arranged so as to have one always on hand when the machine had to be moved.

F. P. Wright said that as the self-propelling cutting machine was regarded as essential why should it be expected that the loading machine would be satisfactory

without means of moving itself, but Mr. Bright in reply declared that the conditions in the one case might be entirely different from those in the other.

To Mr. Bright's remark that the addition of a self-propelling device might add too much weight to certain classes of mechanical loaders Mr. Wright rejoined that to propel the machine the same motor might be used as is utilized in driving the conveyor and in actuating the other moving parts. Mr. Alford was of the opinion that much of the moving is needless and might be overcome by paying more attention to the working of places in sequence.

Mr. Brosky suggested that the time expended in the shifting of mine cars might be cut in two if the loading boom on the loader were lengthened so that cars could be loaded in trips of two cars instead of one at a time. It should be possible to design a telescoping scraper conveyor that would not add to the height of the machine. With this extended the first car could be pushed under the conveyor and the second car placed under the discharge of the loading boom. After the latter car was loaded the other car could be pulled out so as to spot it and loading would resume. Before the loading machine was moved the conveyor could be telescoped and thus be fitted for maneuvering out of one room into the next. Several mechanical engineers have already expressed it as their opinion that the mechanical details of such an arrangement could be worked out.

Right to Balance Evil with Good Times

J. F. Calbreath, secretary of the American Mining Congress, being present, was asked to address the institute. He defended the coal industry from the charge of functioning inefficiently and added that the operator should not be prohibited from making such a profit during favorable periods as will afford him a fair interest on his investment, not only for the period of prosperity but also for the slack periods that precede and follow the brief period of good fortune.

Mr. Calbreath then outlined to the institute the aims of the Southern, or Dixie, division of the American Mining Congress, now in process of making. He referred especially to the effect of the growth of mining on the future of the South, declaring that although the metallic ores in the Southern states were not nearly so rich as those of the West, the additional costs of recovery in the first-mentioned states would be offset by the reduced charge for carrying the products to Eastern markets.

After the noon recess Graham Bright read a paper, illustrated by lantern slides, on "Gathering Locomotives for Coal Mines." In his paper he spoke of the merits of all-rubber cable for gathering locomotives, digressing for a moment to record the experiences of the Pittsburgh Coal Co. in that respect. According to A. B. Kiser, chief electrical engineer of that company, the superintendents assert that all-rubber cable will outlive four to six of the braided cables. The men are not afraid to handle it, for when it is used the danger from shock is reduced to a minimum.

N. G. Alford started the discussion by asking Mr. Bright whether the principal use of the straight battery locomotive was in pulling coal from thin seams, where the cost of making headroom for any other type of locomotive would be prohibitive. Mr. Bright replied that approximately 50 per cent of all the straight storage batteries in use are found in thin seams.

Mr. Wright queried whether some new type of locomotive, the design of which would constitute a radical departure from those in common use, was under consideration. In reply Mr. Bright said that a caterpillar locomotive is now being developed.

Asked by Mr. Alford regarding the inherent operating difficulties in dynamic braking Mr. Bright replied that before adopting that principle for a locomotive one should make sure that the duty of the latter will be such as will permit of the economic use of a plan of that sort.

J. W. Reed, of the Consolidation Coal Co., wanted to know why in storage-battery locomotive design space was not allotted for an extra seat so as to accommodate a second rider. Mr. Bright informed him that such a provision was now being made. The space required, however, was obtained by sacrificing some of the room hitherto occupied by the storage battery.

Mr. Wright then asked the time-worn question as to when the mule and when the storage battery locomotive should be used. It was brought out that many mistakes have been made in the past, either because the operator chose the storage-battery locomotive for working conditions not suitable to it or else because the salesman taking orders for that type of locomotive foolishly led him to believe its adoption best. Where the working places are scattered the mule is just as economical as the locomotive. Mr. Wright finds that one mule will gather about 50 cars in a shift. Graham Bright said that under favorable conditions the locomotive should replace three or four mules and one or two drivers. He added, however, that figures of this nature are almost of no use to the other fellow, as blind statements without a knowledge of conditions of working mean little.

The second paper of the afternoon was entitled "What Good Roads Mean to Mining Districts," and was delivered by C. D. Franks, of Indianapolis, Ind. The change from mining to road making seemed to serve as a relaxation and to be appreciated by the institute.

Railroads Should Balance Car Borrowings

J. M. Dewberry, general coal and coke agent of the Louisville & Nashville R.R., spoke on "Present Coal-Traffic Problems and the Prospects for the Future." No discussion followed the reading of this paper. He regretted that the Interstate Commerce Act of 1920 is not enforced so as to compel a carrier to replace by another every railroad car that it borrows from the owning company. A few of the smaller railroads do not have enough rolling stock to handle the traffic which passes over their tracks. Consequently they attempt to hold cars that pass over their roads.

He condemned openly the inflation of mine ratings. He did not, however, recommend that the rates on the Louisville & Nashville R.R. be lowered to normal unless a corresponding drop were provided all along the line and on other roads. Orders for cars in the aggregate on this road are about 100 per cent in excess of the possible output from the mines which it serves.

After the committee reports had been read, Prof. Norwood, of the State University of Kentucky, read the constitution that had been prepared for the institute's action. C. J. Neekamp's paper on "How to Make an Operators' Association of Most Value" followed.

Mr. Butler said that many of the operators were lax in fulfilling their obligations to their association and lost interest during those periods when they are prospering and having no trouble. That is entirely wrong.

They should be "on their toes" at all times. He added that the operators must avail themselves fully of the publicity that was theirs for the asking. During the rail and coal strikes last summer the public made it apparent that they considered the main issue was the refusal of the miners and the operators to get together. If the operators had resorted to publicity the impression would not have entered the public mind.

Mr. Jenkins, vice-president of the West Kentucky Coal Co., maintained that the operators' side of the question should get at least as much publicity as that of the miners.

F. P. Wright well expressed his belief as to what an association of this kind should be when he said: "There is no better example of association, co-operation or co-ordination than the United Mine Workers." The members of that organization are loyal one to the other and to their society as a whole; nor do they at any time fail to give their leader their hearty support. He compared the operators to a team of horses pulling two ways.

The small operators always hesitate about coming into the operators' association, believing that it is controlled by the larger companies for their exclusive advantage. This is an erroneous idea, Mr. Wright said, as they may derive as much from it as the big fellow. It is the little company that really sets the prices, so why should he not come into the association?

He reiterated what was said by those who spoke before him on the need of publicity. Newspapermen come to the meetings of the operators and ask for information. Usually they are told "nothing doing." As they were sent for the purpose of getting information and are refused it by the operator, in self-defense they get whatever news they can possibly gather, regardless of the source, and then draw on their imagination. The coal industry should tell the public all about its business. There is no secret about it. Mr. Wright concluded by saying that the industry was up for trial before a one-sided tribunal and that it behooved the operator to make it two-sided by more co-operation and membership in the operators' associations and by more publicity.

Mr. Calbreath advocated publicity as a means of achieving a just settlement. This the coal operators have not yet succeeded in setting in operation. The public still believes, as a whole, that the operator gets most of the high price of coal whenever prices soar.

In the election of officers that followed this discussion Prof. T. J. Barr was elected president of the institute for the coming year, and Mrs. Elizabeth C. Rogers was again chosen as secretary-treasurer. It was almost midnight when the meeting, having completed its business, finally was adjourned.

North Carolina Again Among Coal States

By Bion H. Butler
Southern Pines, N. C.

THE Carolina Coal Co., of Southern Pines, N. C., has opened an interesting coal field in the North Carolina Triassic basin of Chatham County, not far from Sanford. It gives all promise of being an important addition to the power supply of that rapidly developing state. The development of the Carolina company includes a slope driven on a 27-deg. pitch 800 ft. into the bed, where it begins a series of headings and workings in a seam of excellent high-volatile coal about 4 ft. thick. Assays of the coal made by various agencies show a quality comparable with the best coals of Pennsylvania—low ash, low sulphur, high heating power and freedom from parting and impurities.

This field is by no means a new one, for before the Civil War the Egypt mine, two miles distant from the Carolina company's new mine, was operated by a shaft that had been sunk into the same coal seam. But the Egypt mine was at that time far from any market that needed coal in any quantity, and transportation consisted of an occasional wagon. Later a railroad was built into Egypt, but still the call for coal was slight and the method of operation was not very practical. An explosion ultimately settled the fate of the property. Later it was reopened, and it is now producing coal, with the prospect that it will become a valuable property under modern methods and facilities.

The Carolina Coal Co., with J. R. McQueen president, C. M. Reeves, general manager, Howard N. Butler superintendent, after extended investigation of the Deep River coal basin obtained 1,200 acres of land and drilled it with core drills, determining their deposit, and then proceeded to sink their slope and open a mine. They have about 3,000 ft. of underground workings exploring the coal, which runs regular, with hard sandstone roof and but little water. At the Caroline and the Cumnock mines about fifteen to twenty cars of coal are going out weekly now, with plans for increasing that as fast as conditions at the bottom will permit. The Carolina company's mine is planned for a daily capacity of 1,000 tons when fully developed.

The company has several thousand acres of additional land in reserve under option or lease or through the ownership of the stockholders and expects to develop further acreage as soon as the present property is brought into its intended activity.

The Deep River coal basin is a limited field in the Triassic rocks much higher up in the geological measures than the coals of the Carboniferous, but the coal appears to be identical with that of the lower formation. Three or four beds are present, only one of which will be worked by the Carolina company at the present time.

At the present time a geological survey is in progress under the management of K. K. Kimball and Maurice Campbell, of the U. S. Geological Survey. A preliminary survey a few weeks ago brought out such a favorable report that it was decided at Washington to make a thorough study of the coal basin that this coal deposit might be brought to the notice of the country and its resources made available for the expanding industries of the state.

North Carolina is fast becoming a prominent manufacturing state, being second to Massachusetts alone in the amount of cotton spun and foremost of all the states in the number of cotton mills. It is the leading tobacco manufacturing state of the Union and is close to the top in the production of furniture. All this takes power. An advantage which the Deep River basin has is that it is two or three hundred miles from competing coal and will have the inside track in its market.

The mines are seven miles out from Sanford near the village of Cumnock, on the Southern and Norfolk Southern railroads. It is believed the field will ultimately develop a capacity of several thousand tons daily, which will find a market within a limited radius.

Testing Materials Society Defines Coke

IN ORDER to standardize the methods of testing coke and to give it a nomenclature which will be of nation-wide acceptance the Society for Testing Materials in its annual volume of tentative standards has included a chapter entitled "Tentative Definitions of Terms Relating to Coke." It defines coke, beehive coke, byproduct coke and gashouse coke.

Foundry coke from beehive ovens it designates as coke which is physically and chemically suitable for use in foundry cupola practice. It may be either 72- or 48-hour coke. The principal difference between the two is the greater size of the 72-hour coke, due to thicker coal beds employed in its preparation. The breeze, or fine coke—smaller than approximately ¾ in.—is forked or screened out.

Foundry coke from byproduct ovens is coke that is physically and chemically suitable for foundry cupola practice and which passes over a screening device having approximately 2½-in. openings. It is not produced in any standard coking time.

Furnace coke from beehive ovens is coke that is physically and chemically suitable for the reduction of iron ore in blast furnaces. The breeze smaller than approximately ¾ in., as in foundry coke from the same source, is forked or screened out. The usual coking time is four 48-hour charges and two 72-hour charges.

Furnace coke from byproduct ovens is coke that is physically and chemically suitable for the reduction of iron ore in blast furnaces and which passes over a screening device with openings varying from ¾ to 1½ in., depending on local conditions at different plants. It is not produced in any standard coking time.

Domestic coke is coke of the smaller screened sizes, below approximately 2½ in., suitable for use in domestic stoves, heaters, etc. The standard sizes are quite generally sold under the names given in the table and the screened sizes are average, although locally varied somewhat.

USUAL SIZES OF DOMESTIC COKE

Name	Size of Screen	
	Passing	Retained on
Egg	2½ in.	1¾ in.
Stove	1¾ in.	1¼ in.
Nut	1¼ in.	¾ in.
Pea	¾ in.	½ in.
Breeze	½ in.	.....

The chapter also defines for purposes of analysis dry coke, moisture, ash, volatile matter and fixed carbon. Volatile matter is described as that part of coal or coke which on heating is driven off in the form of tars and gases and is determined as the percentage loss in weight, less the percentage of moisture, sustained on heating coke in a covered platinum crucible for 7 minutes at a temperature of 950 deg. C.

Obviously coal should be omitted in the first part of this definition if it is not to be placed in the last part. Certainly all the volatile matter driven off dry coal does not consist of tars and gases unless steam is regarded as a gas, which indeed it is, but it would seem that the words were put in purposely to exclude steam, for if it does not exclude it these words are entirely useless. The definition is faulty and misleading.

Dry coke is defined as coke which has been dried to constant weight at temperatures not less than 104 deg. C. nor more than 200 deg. C. in the case of lump coal and between 104 deg. C. and 110 deg. C. in the case of 60-mesh coke. This also is not as specific as it with advantage might be made. Why leave a range as great as that between 104 and 200 deg. C.?

Additions, Removals and Changes in List of Permissible Explosives

BY S. P. HOWELL*

A COMPLETE list of permissible explosives tested prior to March 15, 1922, was published in Bureau of Mines Technical Paper 307, entitled "Permissible Mining Equipment, Apparatus and Explosives, Approved Prior to March 15, 1922," by S. P. Howell, L. C. Ilsley, D. J. Parker and A. C. Fieldner. Since that date up to and including Sept. 30, 1922, the following additions, removals and changes have been made:

ADDITIONS TO LIST OF PERMISSIBLE EXPLOSIVES FROM MARCH 15 TO SEPT. 30, 1922

Brand	Weight of 1¼ x 8 in. cartridge, Grams	Smallest permissible diameter, Inches	Unit Deflective Charge, Grams	Rate of Detonation in 1¼-in. Diameter Cartridge When Fired With a Detonator, Preferably Electric of Not Less Efficiency Than No. 6, Ft. per Second	Manufacturer
Apache Coal Powder A	137	1¼	222	11,710	Apache Powder Co., Benson, Ariz.
Apache Coal Powder B	158	1¼	241	8,210	Apache Powder Co., Benson, Ariz.
Black Diamond No. 17	172	⅞	222	10,780	Ill. Powder Manufacturing Co., St. Louis, Mo.
Duobel L. F.	147	⅞	225	12,440	E. I. duPont de-Nemours & Co., Wil., Del.
Grasselli 2 L.F.	142	⅞	221	10,870	Grasselli Powder Co. Cleveland, O.
Grasselli 5 L.F.	156	⅞	223	7,680	Grasselli Powder Co. Cleveland, O.
Grasselli 6 L.F.	162	⅞	218	9,210	Grasselli Powder Co. Cleveland, O.
Monobel No.1 L.F.	176	⅞	231	12,860	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No.2 L.F.[3]	175	⅞	252	10,760	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No.4 L.F.	175	⅞	252	10,760	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No.5 L.F.	170	⅞	249	6,400	E. I. duPont de-Nemours & Co., Wil., Del.
Monobel No.6 L.F.	176	⅞	220	13,630	E. I. duPont de-Nemours & Co,, Wil., Del.
Monobel No. 9	137	⅞	222	7,310	E. I. duPont de-Nemours & Co., Wil., Del.
Union D. L. F.[1]	163	⅞	223	11,100	Union Explosives Co. Clarksburg, W.Va.
Union E. L. F.[2]	163	⅞	233	10,220	Union Explosives Co. Clarksburg, W.Va.

[1] Same as Pa. Coal Powder, B. L.F. [2] Same as Pa. Coal Powder C. L.F. [3] Same as Monobel No. 4 L.F.

In addition to the foregoing additions, the following changes have been made: Aetna coal powder A changed to Hercules coal powder A; Aetna coal powder AA to Hercules coal powder AA; Aetna coal powder B to Hercules coal powder B; Aetna coal powder C to Hercules coal powder C; Aetna coal powder 2 to Hercules coal powder 2; the smallest permissible diameter of Black Diamond No. 7 has been changed to ⅞ in.; of Bituminite 5 to 1 in.; Grasselli Nos. 1, 5 and 6 all changed to ⅞ in.

The following explosives have been withdrawn from the list of permissibles: Bituminite 8 L.F., Coal Special 1-A, Collier 6, Franklinite 1, Nitro low-flame Nos. 1 and 2, Big Red No. 6, L.F., DuPont permissible No. 1, Mine-ite A, Tunnelite No. 4, and Tunnelite No. 8.

*Explosives engineer, Bureau of Mines.

Problems of Operating Men

Edited by James T. Beard

Inspiring Self-Confidence in Miners by Example

All Have Much to Learn From Others—Gaining the Confidence of Men Is the First Essential Quality of a Good Foreman—Confidence Insures Trust and Obedience

EXAMPLE goes farther than precept. Nothing will inspire confidence in men for their boss quicker than the show of a like confidence on his part in them. Every man has much to learn from his fellows; and men are quick observers of the feelings of their boss toward them, and not slow to follow his example.

This was the thought that I attempted to express in my letter, a few weeks ago (*Coal Age*, Aug. 24, p. 290), in regard to gaining the confidence of men, which I see, from the letter of John Rose, page 636 of the last issue of *Coal Age*, was not fully understood.

It has always been a pleasure to read the letters of Mr. Rose, as I know that men of his stamp have been longer in the mining game than myself. I am a comparatively young man, having been mining coal about eleven years; but I am in the game for all it is worth and am always ready to gain new ideas from the many writers of experience in *Coal Age*.

In his excellent letter, Mr. Rose's main thought seems to be to inspire men to have confidence in themselves. I am sorry that he should have misread my letter enough to think that I had any other thought than that of inspiring men to act intelligently, by giving them safe instructions.

Confidence in a Foreman Inspires Obedience to His Orders

The first essential of a good foreman is to gain the confidence of his men. Until he has done that, his instructions to them, regarding safe practices and economical methods, will fall on deaf ears. On the other hand, men will listen and give heed to what a man says in whom they have confidence. That was my idea in writing that first letter.

The instance I then cited was that of overhearing the conversation of two miners, in the room adjoining my own. Miner No. 1 was telling Miner No. 2 that he (No. 2) was doing unnecessary work in setting some timbers back along the road in his place. The reply was, "Well, George, my boss told me to set them while I had time between cars He said it would make my place safer and the work easier for drawing back the pillars, and he knows."

Here was a man who had confidence in his boss; and that confidence enabled him to profit by the instructions given him by an experienced foreman who foresaw that the setting of a few timbers, in the miner's spare time, would greatly assist the work of drawing back the pillars, later, when that had to be done.

Miner and Foreman Disagree

While I am writing, let me give an another instance when there was not the same confidence on the part of the miner in his boss. The illustration will also serve to show the danger that may result from an indifferent attitude on the part of a foreman who is willing to compromise his instructions, owing to objections offered by the miner.

Awhile ago, I chanced to be in a man's place when the assistant foreman came in. Observing a loose piece of slate that had no timber to support it, the assistant foreman said to the miner, "John, put up a post here and do it now." The reply was, "I can't stand a post there, as it will not give me room to work." "Well," said the foreman, "take the slate down then."

The miner then explained that taking down the slate would mean the taking out of other timbers on which it rested and would require much extra work. The result was that the assistant foreman compromised what he knew to be a dangerous proposition and told the miner to stand a temporary post there, until he could get away from the place.

Compromising Evident Danger Unsafe Plan to Adopt

This satisfied the miner since, as he said after the assistant had gone, he could stick up anything there for the time being and it would be all right with the boss. To my mind, this assistant foreman made a great mistake when he told the man to set a timber temporarily. He should have realized that the only safe plan to pursue was to take the loose piece down and avoid a probably fatal accident. My plan is, never defer dangerous work, but give it immediate attention.

What a foreman needs to impress on the minds of his men is to always do things in the right way. A foreman must show his men, the first time, and watch them, afterwards, to see that they understand how to do it themselves. Then, tell him it is good; but show him where he can improve by making some changes another time.

Encouragement goes a great ways in instructing men. Encouraging words show a foreman's confidence in the man's ability to perform work in the right way; and confidence, on the part of the foreman, is the first step in gaining the confidence of his men and securing their co-operation in making their work safe.

By teaching men to guard against present dangers, which are clearly seen and realized, they learn to accept and obey instructions that are designed to avert dangers, which may arise in the future. Future dangers are not so clearly discerned by the miner of less experience. Only in this way can we expect to establish self-confidence in men, by training them to foresee danger and play safe. In closing, let me thank Mr. Rose for his good letter, every sentiment of which I fully endorse.

G. W. Breeden,
Thorpe, W. Va. U. S. Coal & Coke Co.

Gathering Cars With Reel Cable

Practical difficulties encountered in the use of long cables, in gathering cars —Expense of frequent renewals of worn cables—Danger of sparking by cable coming in contact with rails.

THE inquiry that appeared in *Coal Age*, Oct. 12, p. 594, regarding the use of single and double cables, for gathering cars at the working face, recalls to my mind experiences in the use of reel cables for gathering cars.

In common with others, we had long followed the practice of running out the cable, often to its full length, to enable the locomotive to reach the cars standing at the faces of headings and rooms. It was some time before we learned by experience the difficulties and dangers attending the use of long cables for that purpose.

In the first place, there was considerable delay in unreeling and reeling the cables; but that was not the only and by no means the least objection to the continued use of long cables. The constant wear and tear shortened the life of the cable and required frequent renewals, which made the practice very expensive.

Of still greater importance, however, was the danger due to the sparking of the wire, which invariably occurred when hooking the cable to the trolley line. Again, it was impossible to avoid the cable's coming in contact with the rails as it stretched along the track. This was another cause of much sparking at points where the insulation had

been worn off so that the wire was exposed.

At one of our mines, we were using a reel, for a distance of between three and four hundred feet, to pull cars out of fifteen places that were running to the dip. Here, it became necessary to change the cable every six weeks and the display of fireworks kept these places lighted up continuously.

Our experience finally taught us that, hauling coal with a reel, while all right on a straight road, is expensive and dangerous where the roads are crooked and the grades not uniform. We concluded that it was safer practice to keep the trolley wire within 50 ft. of the working face, and the result has been a saving of both time and expense.

In the instance mentioned where fifteen places were running to the dip, a little room hoist was installed; and, using a one-half inch steel rope, the cars were pulled out of these places easily and quickly. By this means, a trip was gathered in the same time that the locomotive was hauling a previous trip to the foot of the shaft; and there was no more trouble with the sparking of wires.

Before closing, let me mention one point that may be of interest to many readers. In order to avoid the frequent splicing of the trolley wire, we have adopted the scheme of not cutting the wire at the dead end. Instead, we have found no difficulty in carrying along a spool of wire holding, say 1,000 ft. The spool was lodged in a convenient place and moved along as often as it was desired to make an extension of the main trolley.

Notwithstanding the fact that the mining law, in some states, limits the distance of the dead-end of a trolley line from the working face, it is my belief that there is more danger in the use of long cables, than would result from a closer approach of the trolley wire to the working face. In other words, such a remedy is worse than the disease.

Plains, Pa. RICHARD BOWEN.

Why Accidents in American Mines Do Not Decrease

On every hand is evidence of efforts made to promote safety—Chief topic of remark among mine officials and at miners' meetings — Comparing English and American mine statistics.

THAT this is a great age for safety-first movements in every branch of industry, is apparent whichever way we turn. On every hand, we find evidences of the many efforts that are continually being put forth to promote safety. I notice that the mere expression of one's opinion, in *Coal Age*, on any phase of the subject of safety, always brings a host of letters in reply.

The visitor to any public works, today, finds numerous printed notices giving warning of dangers to be avoided. The same is true when we enter a large mine. The mine bulletin boards display pictures showing both how accidents may happen and how they can be avoided.

It would seem that if these numerous warnings and signs of danger were given the slightest heed by workmen, accidents would be almost impossible and soon become an unheard of occurrence. Among mining officials, the avoidance of accidents in and around mines is almost sure to form the chief topic of conversation when they meet; and safety methods and appliances are the principal subjects discussed at their regular weekly and monthly meetings.

Again, our compensation-insurance inspectors continually remind us of what must be done, or what dangerous practices must cease, if the mine rating is not to be increased. Many of the items in the inspector's Book of Standards, by which the mine rating is determined, appear so insignificant as to hardly attract the notice of the average mining man.

With all these safeguards and daily reminders, however, we may well ask ourselves the question: Is our accident list growing any less? To be honest with ourselves, we must admit that the results are not in keeping with all the efforts put forth in the interest of safety.

Fatality Rate in the United States Greater Than in England

Many comparisons between English and American mines have been made in *Coal Age*, from time to time. These comparisons are fair and just, as the mining laws of the two countries are very similar. Owing to the generally deeper mines of England increasing the dangers of mining the coal, such comparisons should be more favorable to the mines of this country.

Notwithstanding the fact, however, that general conditions favor American mining, what do we find? In the last report giving the fatalities in American mines, I see the number of men killed is between three and four, for every thousand men employed. For the same period in England, the report gives less than one fatal accident, per thousand men employed.

There must be a reason for this great difference in mining fatalities between the two countries. In my opinion, it is to be found in the fact that English laws are *made to be kept*, while in this country violators of the law too often go unpunished. By some hook or crook the guilty person, here, expects to escape the prescribed penalty for his act.

Violations of Mines Regulation Act Quickly Punished

To illustrate this truth, permit me to cite two instances of violations of the laws, there and here. On a certain occasion, in a mine in England, an overman, inspecting some loaded cars on the shaft bottom, found a lump of coal having a drillhole partly filled with coal slack that had been used in tamping the hole.

The shot had evidently been tamped in direct violation of the Coal Mines Regulation Act, that requires the use of clay for that purpose. Taking the lump of coal from the car and laying it aside, the overman sent into the mine for the man and, facing him with the evidence of his guilt, had him arrested at once.

The man expected no leniency and was, in no way, disappointed when he received the full penalty for his act, under the law, both the overman and the manager appearing as his prosecutors. Compare this summary punishment of a violator of the mine law in England, with the result of a similar violation of the law in this country.

Mine Officials Plead Leniency for Men Who Violated Code

Not long ago, at a certain mine where I am acquainted, several men were found to have matches in their possession when at work in a gaseous section where safety lamps were in use. Besides the matches the searchers found pipes and tobacco on the men. Carrying these articles into a mine generating gas violated the code and information was conveyed to the state mine inspector, who had the men arrested.

When given a hearing, however, the mine superintendent appeared in court and pleaded with the judge for the exercise of clemency toward the men, claiming it was their first (?) offense. The result was that the men were let off with a simple warning by the court and no fine or other punishment was imposed on them. The plea of the superintendent was a mistaken kindness and the action of the court does not speak well for American justice.

Classifying Coal Mines

There is another difference between English and American practice regarding mines generating gas. In England, mines are not classified as "gaseous" and "non-gaseous." A clause in the Mines Regulation Act reads somewhat as follows: "All places where men shall work or pass, shall be examined by a competent person." It does not matter whether two men, or ten men, or fifty, are working in the mine; nor whether they are in ten yards, or a mile, the law requires the examination of the working places by a competent person.

In this country, our laws lay far too much stress on classifying a mine as "gaseous" or "non-gaseous." The finding of a little gas in a place may be sufficient to cause the mine to be classed as a "gassy mine," and, as a result, its management must shoulder the expense of employing shotfirers, firebosses and first-grade certified men as mine officials.

It can be readily seen that, under this phase of the law, an unjust difference may be established between two mines, in the same field and operating practically under like conditions, except that a small quantity of gas found in a place necessitated this arbitrary classification, under the law.

It must not be thought that I would do away with our firebosses and shotfirers. That is not the case. My point is that the gas danger is over-esti-

mated in our laws, in thus classifying mines. Statistics show that more than 50 per cent of our mine accidents result from falling roof and coal, while one-tenth of this percentage of accidents are due to gas. Let us, then, seek a more equable basis that will work no unnecessary burden on any mine; but let every mine be examined for the dangers that are present.

Indiana, Pa. THOMAS HOGARTH.

Why Install a Booster Fan

Need of installing a booster fan shows bad mine management — Practical means of increasing the circulation in a mine—No place for a ventilator underground.

IT was with much surprise that I read the inquiry of a mine manager in Wyoming, who was contemplating the installation of a booster fan in his mine and wished to know the most advantageous point for its location. From the proposition presented, it seems evident that the intention was to install the booster as a unit in the ventilating system of the mine.

In addition to what has already been said in the reply to this inquiry, I may be permitted to add a few words endorsing the position taken by the editor. In my opinion, the installation of a booster fan within the workings of a mine is a bad mistake. Indeed, the need of making such a move is a sign of poor mine management on the part of the officials in charge.

NO INCREASE IN THE CIRCULATION

Observation and experience show that a booster fan, installed in a mine, does not increase the quantity of air in circulation. As has often been explained in the columns of *Coal Age*, the only effect of a booster is to rush the air past leaky stoppings and doors; and this can only be recommended as a temporary means of improving the circulation at the working face, in a section of the mine about to be abandoned.

No practical mining man will ever prescribe the installation of a booster fan as a unit in mine ventilation. There are other means of improving the circulation at the working faces that are safer, more efficient and in line with good management.

In the first place, clean up all airways and remove every obstruction to the free passage of the air current throughout the mine. Wherever practical, straighten the course of the air and avoid sharp bends in the airways. Repair all leaky stoppings and doors, and enlarge breakthroughs where the area is less than that of the airway.

At times, it may even become necessary to sink an air shaft at some point nearer the working faces, which will greatly shorten the distance the air must travel; and a larger quantity of air will then be circulated with less power. Frequently, in the development of a mine, this is the only practical remedy to improve the circulation.

To my way of thinking, in nine cases out of ten, the installation of a booster fan, at some point near the working face, is merely a bluff on the part of the company to make the miners think that everything possible is being done to give them good air. In other words, the miner is hoodwinked and the management avoids, for a time, the making of the necessary repairs of poor stoppings and doors.

In a few words, let me say that the situation should seldom arise that will warrant the installation of a booster fan in a mine. The mine manager should have the practical experience and skill, in the development of the mine, that such a condition will be avoided where it will become necessary to resort to the use of a booster fan.

Let it be understood, once and for all, that an underground location of any essential factor in creating the air current in a mine is not to be considered. All such means must be placed on the surface where they are accessible in any emergency that may arise.

Wilder, Tenn. OSCAR H. JONES.

Inquiries Of General Interest

Making Blueprint Paper and Blueprinting

Formula for Sensitizing Paper—Action of Sunlight to Change Chemical Salts—Washing Out Unchanged Salts Develops Print — Coloring Prints

WILL you kindly explain, through the columns of *Coal Age*, the process of making blueprint paper and give me any information needed regarding the coloring of blueprints to show distinctive features?

Saskatchewan, Canada. MINING ENGINEER.

In the making of blueprint paper, a good quality of rag paper should be selected, as this gives whiter lines, in the blueprinting, than paper made of wood pulp and is more readily handled in the process of sensitizing. Cloth specially prepared, or paper backed with cloth, is often used when the blueprints are required to withstand much handling.

The sensitizing of the paper must be accomplished in a dark room or, at least, where the light is greatly subdued. Two solutions are first prepared as follows: Solution 1 consists of one part by weight of ammonia-citrate of iron, dissolved in five parts of water. Solution 2 is made by dissolving one part by weight of potassium ferricyanide, commonly called red prussiate of potash, in five parts of water. These solutions must be kept separate in stoppered bottles until they are required for use.

In sensitizing, the paper is laid flat on a table. The two solutions are then mixed in equal parts, in the dark room where the work is performed, and the resulting mixture applied to the paper as uniformly as possible, using for that purpose a soft sponge and working quickly to avoid unequal warping of the paper. After applying the sensitizing solution, the paper is hung up to dry, in the dark room, and when thoroughly dry is stored in a dry dark place until wanted for use.

It is difficult to say just what reaction takes place under the influence of light, either sunlight or electric light, whereby the iron salt is rendered insoluble, forming the deep blue background when the print is washed following the exposure of the sensitized paper under the linen tracing to be copied. The action is complex, the previously soluble iron salt being probably reduced and forming an insoluble prussiate, which the presence of the citric acid can no longer prevent. Before the reduction of the iron to the lower oxide, the citric acid in the mixture prevents the precipitation of the iron by the ammonia; and this is the condition where the light has not penetrated and changed the salt beneath the dark lines of the tracing.

The time of the exposure of the sensitized paper beneath the tracing to be copied will depend on both the strength of the light and the age of the paper. In strong sunlight, not more than 3½ or 4 min. is required when the paper is fresh. Fresh sensitized paper has a light pea green color. In time, however, this color changes gradually to a darker shade of green and finally to blue when the paper is old and no longer of any use. Also, the fresher the paper, the whiter will be the lines on the print after washing.

No time should be permitted to elapse between the exposure to the light and the washing process. It is a good plan to so submerge the paper as to cause the water to flow rapidly over its entire surface. Better results are generally obtained when the water is kept slightly agitated over the surface of the paper, by moving the fingers forward and backward through the water for a short time during the first moments of immersion. By this means, the dissolving action of the water is made more uniform.

It will sometimes happen that a print has been overexposed and, as a result, many of the finer lines appear to be almost obliterated. In that case, it is

possible to restore these, largely or completely, by pouring over the print a weak solution of the red prussiate of potash.

Fresh water should always be used in washing the prints and the process must be continued long enough to completely remove the soluble salt and show every detail of the drawing in white lines on a dark blue background. The paper should then be removed from the tank and hung up where it will dry uniformily.

A blueprint always shrinks to some extent, depending on the quality of the paper. For this reason, it is convenient to draw a scale on the original tracing. Its reproduction on the blueprint will serve as a reference, where dimensions have not been indicated and must be scaled on a blueprint when in use out of the office.

It would seem unnecessary to add that the exposure of the sensitized paper to the light is made in a frame specially designed for that purpose. The paper is laid beneath the linen tracing to be copied and both are placed under the glass of the frame. It is important to bed the paper and tracing on some soft material that will keep them evenly pressed against the glass, in order to obtain a good impression of all the lines of the drawing, particularly the fine dimension lines.

Sometimes, instead of section lining, or other distinctive markings on the original tracing, coloring matter is used to symbolize what is wanted; or the same coloring may be made on the blueprint only. This can be done with a brush or by colored crayons, as desired. When the coloring is done on the original tracing, the blueprint will show a lighter tint than the background. The tinting on the original tracing with a brush must be carefully done, using a very dilute solution of the desired water color and applying it uniformly and quickly to avoid warping.

Examination Questions Answered

Mine Managers' Examination, Nova Scotia, 1922

(Selected Questions)

QUESTION—*What is the smallest percentage of gas that, in your opinion, can be detected by means of an ordinary safety lamp?*

ANSWER—The ability to detect small percentages of gas will depend largely upon the observer and the kind of lamp employed. In the use of a common Davy lamp, few firebosses are able to detect less than 2 or 2½ per cent of gas. On the other hand, a good fireboss, using a Wolf lamp, will be able to detect as low as 1 per cent of gas present in the air.

QUESTION—*What are the gases usually given off by a gob fire? Describe their properties.*

ANSWER—The gases given off by a gob fire will depend on the supply of air to the fire. In a plentiful supply of air carbon dioxide is produced, the combustion being then complete. More often, however, there is lack of air sufficient to produce complete combustion, in a gob fire; and the result is that carbon monoxide gas is produced, with some carbon dioxide.

Carbon dioxide is an extinctive gas, containing no available oxygen. The gas is not combustible and will not support life. When air is breathed containing carbon dioxide the effect is to produce headache, pains in the back and limbs, nausea and suffocation if the percentage of gas is sufficient.

Carbon monoxide is a poisonous gas, small percentages of this gas, present in the air breathed, may produce instant death. The gas is combustible, burning with a pale blue nonluminous flame.

QUESTION—*How many horsepower will be required to raise* 4,000 *cu.ft. of water, per hour, from a mine* 1,080 *ft. deep?*

ANSWER—Taking the weight of water as 62.5 lb. per cu.ft., and assuming a water-end efficiency of the pump as 75 per cent, the power required, in this case, is

$$H = \frac{4{,}000 \times 62.5 \times 1{,}080}{0.75 \times 33{,}000} = 181.8 \text{ hp.}$$

QUESTION—*How much work is done in raising* 300 *tons of coal up an incline* 2,700 *ft. long and rising* 1 *ft. in* 3, *adding* 40 *per cent to the load, for the friction?*

ANSWER—Taking the rise as 1 ft. of vertical, in 3 ft. of inclined measurement, the total rise of this plane is 2,700 ÷ 3 = 900 ft. Then, adding 40 per cent to the load, to allow for friction, the total effective load is 300 × 1.40 = 420 tons. Therefore, the work performed in making this hoist is 420 × 2,000 × 900 = 756,000,000 *ft.-lb.*

QUESTION—(*a*) *How is the electric current generated before it is transmitted?* (*b*) *How is the transmitted electric power utilized?*

ANSWER—(a) A dynamo, operated by a steam engine or other source of power, is used to generate an electric current. The dynamo is then called a "generator."

(b) The transmitted electric current is made to pass through the coils of another dynamo, and the reaction that takes place, between the armatures and the commutator, causes the latter to revolve. In this case, the dynamo is called a "motor." The principle of action in a motor is exactly the reverse of that in a generator. While a generator converts mechanical power into electrical energy, a motor converts electrical energy into mechanical power.

QUESTION—(*a*) *How is electrical energy transmitted in a mine?* (*b*) *What three things should be carefully proportioned for the safe transmission of electrical energy?*

ANSWER—(a) Electrical energy is transmitted, from the generators to points in a mine where it is to be used, by means of a copper wire called a conductor.

(b) In transmitting electrical power, the size of the conducting wire, or amount of copper used, must be proportioned to the strength of the current, or amperage required, and the distance from the generator to where the power is applied. Using a larger wire, or more copper, the same current can be transmitted at a lower pressure, or voltage.

QUESTION—*Do you consider electricity, as a motive or lighting power, dangerous in mines producing explosive gases?*

ANSWER—Yes. In mines producing any considerable quantity of explosive gas, electrical installations should not be considered, as the presence of live wires makes possible the accidental ignition of gas and is a menace to safety.

QUESTION—*How would you proceed to remove a man in contact with a live wire?*

ANSWER—Of course, if a switch is close at hand shut off the current at once. Otherwise, make no delay; but, standing on a dry board or dry ground, drag the man from the wire by seizing his clothing if dry. If a pole is at hand it may be possible to push the man off from the wire. It is sometimes possible to seize an ax and cut the wire by one quick blow on the side of the victim toward the power. Again, an iron bar or drill may be thrown across the wire, on the side toward the power, for the purpose of short-circuiting some of the current.

QUESTION—*What are the most common dangers that come from the use of electricity in mines; and what methods would you employ to prevent accidents?*

ANSWER—When an electric installation is not properly made there is danger of men and animals coming in contact with unprotected wires; or fire may occur by the ignition of gas, or combustible material, owing to the sparking of live wires, blowing out of fuses, etc. To prevent accidents of this nature, all electrical installations should be made by competent electricians thoroughly familiar with mining conditions. Protect all wires where men or animals may come in contact with the wire.

"Competitive-Field" Wage-Making Plan Likely to Be Revived at Second Miner-Operator Conference

Some form of the old Central Competitive Field plan of wage making for the coal-mining industry of this country is likely to be re-established this winter. A fairly well-defined trend in that direction was the nearest approach to concrete accomplishment at the joint conference of operators and miners from fifteen districts held in Chicago last week. The conference, whose first futile day was reported in these columns last week, spent four days at the job of trying to design new wage-making machinery for the future. Then it adjourned to reconvene Dec. 6 in Chicago. For four days the miners sat back smugly confident, waiting for the operators to agree upon something. For four days the operators wrangled among themselves, arguing everything from the sublime to the ridiculous, the men from the "outlying districts" fighting for a direct voice in future wage negotiations and the men from the four states of the old Central Competitive Field—western Pennsylvania, Ohio, Indiana and Illinois—resisting, though divided in their own ranks. They reached no final agreement on any plan. But on the evening of the fourth day—Friday, Nov. 17—when it was evident that nothing better could be done, the conference adjourned until Dec. 6.

In the meantime the operators are discussing in their home regions a scheme of re-establishing some sort of "central competitive field" whose mine owners would discuss policy with men from the outlying districts and then send their own scale committee in to make an agreement with the union miners as of yore. It is by no means certain what regions would comprise this central field. Neither is it determined what groupings of "outlying districts" would be made. Various ideas along these lines are to be brought back to Chicago on Dec. 4, when the operators' half of the joint committee is expected to convene two days ahead of the main conference. Illinois operators, divided at least two ways on the question of entrance into a "central competitive field," will meet in Chicago, Friday, Nov. 24, in an effort to solidify the position of that state.

Thus the first session of the joint miner-operator conference on ways and means for future wage negotiations failed to set up machinery or even to design any; but it did do two other things. It gave the operators a chance to clear a good deal of argumentative ground and it gave enough promise of working out a plan in December so that the miners' union cannot aggravate the 1923 strike scare and thus hold up coal prices this winter by telling the public that the operators refused to do business with them.

Miners Look to Operators to Produce a Plan

From the beginning of the Chicago conference until the end the miners took the position that it was up to the operators to produce a new plan, and that until they did the old four-state method of wage agreement should be considered to be in effect. Both President John L. Lewis and Secretary-Treasurer William Green said the miners were there with open minds, hoping something constructive and acceptable would be conceived. They made it plain that the miners would consider any proposal that gave them some single authority among the operators with which to deal which would be sufficiently representative to fix a basis for the rest of the country.

Among the operators, argument started early on the question of effecting some kind of national basis of agreement. This was the main drive of the "outlying districts." Two definite plans were proposed, one by Harry N. Taylor, of Kansas City, Mo., and one by C. H. Jenkins, of Fairmont, W. Va. These two plans in various forms were debated for three days, their advocates offering many modifications, but all to little purpose.

The original Taylor plan, written by Mr. Taylor and by Commissioner W. L. A. Johnson of the Southwest Interstate Coal Operators' Association, would have created a joint national wage board to negotiate a basic wage scale for the whole country. Variations from this basic rate would be determined for the various districts on account of "economic, competitive or physical conditions." These various district rates would be termed the base rate plus or minus given percentages and would be fixed "under authority of the national conference and by mutual agreement between the miners and operators of the districts."

Courts of appeal to settle disputes and prevent strikes would be created also. A "joint executive board" for the whole country, composed of an equal number of miners and operators plus a non-partisan chairman of highest caliber, whose vote would break any tie, would be the "supreme court." Smaller joint district executive boards would function in each district or group of districts to consider all sorts of disputes which the existing local and district machinery could not settle.

The plan provided that after the "base rate plus or minus" wage scheme had worked at least six months, either miners or operators could appeal to the joint executive board for a readjustment of the base for their district, providing it could be shown "that the base rates existing in the adjacent or surrounding competitive territory have been either advanced or diminished equal to an amount of 10 per cent of such base rates." This was calculated to give union fields participating in the scheme a chance to gain protection against neighboring non-union competition.

National Features of Plan Attacked

The national base-rate feature and the national negotiation features of the plan were attacked at once, mainly by men in the old four-state competitive field. Various features of the appeal plan were criticised and it was apparent the miners thought the scheme smacked too much of arbitration. Mr. Taylor and Mr. Johnson made it plain, however, they were proposing only a general idea and stood ready to consider any modifications or additions that anybody had to suggest. They rewrote sections of the plan several times, in an attempt to modify the national feature and provide something approximating district autonomy. But there seemed no possibility of getting anything like a majority to support it.

Mr. Jenkins and the men of northern West Virginia pushed hard for their plan, which also was presented, they said, only as a general idea which could be molded to various forms. This plan in its original form would have set up a national labor organization of union operators to determine labor policy only and not to negotiate wage scales. This organization would fix in general terms the operators' policies with regard to the proportion of wage increases or decreases within all districts, changes in hours, minimum cases for district differentials, improved methods of mining, labor and production, and questions involving labor supply. It would supervise and enforce a new system of district zones, provide a channel of communication with governmental departments and the general public on labor matters, establish and maintain a general bureau of industrial relations to provide statistics and other data for negotiations and to disseminate information throughout the industry, and to set up both district and national appeal boards to settle disputes.

In further detail the West Virginia plan ran more or less parallel to that from the Southwestern Interstate field. It called for a joint wage council of operators and miners to determine a base wage for the country, hours of labor and the duration of each periodic wage agreement. The operators' members on this council would be selected by a vote on a tonnage basis. Joint scale committees for each district would work out district differentials and working conditions for their districts. A joint national appeal board with a non-partisan chairman and with members chosen by districts would "decide all questions upon which the National Wage Council has been unable to agree."

The West Virginia men thought the country should be redistricted into eight regions thus: 1, Pennsylvania;

2, West Virginia; 3, Illinois; 4, Ohio; 5, Indiana; 6, (Southeast) Maryland, Virginia, Kentucky, Tennessee and Alabama; 7, (Southwest) Missouri, Arkansas, Kansas, Oklahoma, Texas and New Mexico; 8, (Northwest) Michigan, North Dakota, Iowa, Colorado, Wyoming, Utah, Montana and Washington.

There was such hesitancy among operators to debate freely that finally all the suggested plans were referred to an operators' committee of six to confer and try to recommend something to the whole conference. On this committee was Phil Penna, as chairman of the conference; H. N. Taylor, C. H. Jenkins, Charles O'Neil, J. H. Pritchard and Rice Miller. This committee failed to agree and made only partial reports back to the conference. On Wednesday afternoon, after the operators in long separate sessions continued to make no progress, a joint committee of twelve was created by adding six miners to the original operators' six. The miners were: William Green, John Brophy, Frank Farrington, Arch Helm, Lee Hall and Frank Mooney.

This committee reported Thursday morning that it could agree upon nothing. Then, in the main conference, all sorts of plans were offered without success. A motion to merely set up a joint scale committee to try to negotiate the next wage agreement on a national basis got just six votes. A motion to resume the old four-state plan was beaten. A plan to divide the whole country into three districts, each to work out its own salvation independently, was squelched. The three districts would have been an eastern one composed of Ohio, Pennsylvania, West Virginia and Virginia, a central one with Illinois and Indiana as the principal members, and a western one to include everything west of Illinois.

John Lewis said he proposed in general terms a national scheme, a four-state scheme and a middle-ground which would have set up an enlarged "central competitive field" to act for the operators in wage negotiations. None of these aroused any enthusiasm.

Finally on Friday, the fourth day of the meeting, it appeared that some form of a competitive field was the only one on which any number of operators could unite. The outlying districts demanded that they at least have a voice in determining the policy which the proposed central group should follow in wage negotiations. Since this had possibilities, another operators' committee was named to work out something tangible. On this committee were Michael Gallagher, of Ohio; Rice Miller, of Illinois; Ira Clemens, of Kansas; James Needham, representing Wyoming; Hugh Shirkie, of Indiana; John A. Donaldson, of western Pennsylvania, and B. M. Clark, of central Pennsylvania.

This group could produce nothing that would get an immediate majority, so, on motion of W. K. Kavanaugh, of Illinois, the conference adjourned to Dec. 6, with an operators' preliminary session beginning Dec. 4. The operators are supposed to return with new ideas for the grouping of districts and for the possible representation of all districts on some advisory council to function with but not to dominate a wage-making group resembling if not duplicating the Central Competitive Field.

The final statement to the public which John L. Lewis and Phil Penna issued said "some substantial progress had been made and there are reasonable grounds for belief that a definite program can be agreed upon."

The delegates on the joint conference, two operators and two miners from each union district, are as follows, with the two operators named first under each district number: District 2, Charles O'Neill, B. M. Clark, John Brophy, Richard Gilbert; District 5, John Donaldson, Jesse Sanford, P. T. Fagan, William Hargest; District 6, Michael Gallagher, J. H. Pritchard, Lee Hall, G. W. Savage; District 10, C. C. Anderson, J. H. Wallace, Martin T. Flyzik, W. C. Thompson; District 11, Hugh Shirkie, M. L. Gould, John Hessler, William Mitch; District 12, W. K. Kavanaugh, Rice Miller, Frank Farrington, Harry Fishwick; District 13, George Heaps, E. C. Smith, J. H. Morris, John Gay; District 14, W. L. A. Johnson, Ira Clemens, G. L. Peck, Van A. Bittner; District 17, C. H. Jenkins, Joseph Purseglove, W. M. Petry, Fred Mooney; District 21, J. B. Wilson (absent), W. M. Williams, J. L. Britton, Mike Broshears; District 22, H. C. Marchant, Herbert Addison, Martin Cahill, James Morgan; District 23, C. W. Taylor, F. D. Rash, Lonnie Jackson, Wes Ames; District 24, Warren Pippin, R. M. Randall, George B. Toskey, John Murray; District 25, F. W. Lukens, H. N. Taylor, Arch Helm, James Cooley; District 27, F. W. C. White, James Needham, Nathan Smethurst, Stephen Ely. Ex-officio operator members were Phil H. Penna, A. G. Edwards and J. M. Roan and miners were John L. Lewis, William Green and Philip Murray. Mr. Penna is permanent chairman of the conference, and Mr. Green and Mr. Edwards secretaries. Mr. Roan is sergeant at arms.

Navy Department Opens Bids for Coal

Bids to supply coal needs of the Navy Department for the remainder of the fiscal year ended June 30, 1923, were opened on Nov. 14. The proposals were divided into two sections, one providing for delivery from November to the end of the period and the other for shipments during November and December only.

Among the larger bids were the following:

Twenty-eight thousand tons for delivery from November, 1922, to June 30, 1923, in 600-ton barges alongside coal plant at the Navy Yard, Brooklyn, N. Y.: Emmons Coal Mining Co., Philadelphia, $7.05; H. B. W. Hall, New York City, $8.68; Iron Trade Products Co., $6.75, alternate bids $7.13 and $6.74.

Forty-two thousand one hundred tons divided into (1A) 32,100 tons for delivery f.o.b. Philadelphia Navy Yard in hopper-bottom cars and (2A) 10,000 tons f.o.b. barges at Philadelphia coal piers; from November, 1922, to June 30, 1923; Emmons Coal Mining Co. (1A) $6.73; (2A) $6.48; Iron Trade Products Co., (1A) $6.55; (2A) $5.99, alternate bids $6.37; Morrisdale Coal Co., Philadelphia, Pa. (2A) $7.63; Quaker City Coal & Coke Co. (2A) $6.51.

Twenty-five thousand tons divided into (1B) 16,000 tons and (2B) 9,000 tons, for delivery as above in November and December, 1922: Iron Trade Products Co., (1B) $6.55, (2B) $5.99, alternate bids $6.37 and $5.88; Morrisdale Coal Co., (2B) $7.63; Quaker City Coal & Coke Co., (2B) $6.51; Dexter & Carpenter, (2B) $7.82.

Twenty-four thousand tons for delivery November, 1922, to June 30, 1923, f.o.b. dump-bottom cars on tracks in the Navy Yard, Washington: Davis Coal & Coke Co., $7.29; Iron Trade Products Co., $6.55; L. H. Snead & Co., Inc., Washington, $7.35; C. T. Blake Co., Cincinnati, $9.02.

Ten thousand five hundred tons for delivery January to June 30, 1923, f.o.b. hopper-bottom cars, White Plains, Md.: Davis Coal & Coke Co., $7.72; Emmons Coal Mining Co., $7.26; Fidelity Coal Mining Co., $4.30; Iron Trade Products Co., $7.12; Quaker City Coal & Coke Co., $7.49.

Twenty-eight thousand eight hundred tons for delivery November, 1922, to June 30, 1923, (1A) f.o.b. 300-ton barges alongside sea wall, and (2A) f.o.b. hopper-bottom cars, Naval Academy, Annapolis, Md.: Davis Coal & Coke Co., (1A) $7.44; (2A) $7.29; Iron Trade Products Co., (1A) $7.08; (2A) $6.93.

Ten thousand tons for delivery in November and December, 1922, as above: Davis Coal & Coke Co., (1A) $7.73; (2B) $7.58; Iron Trade Products Co., (1A) $7.08; (2A) $6.93.

The government states that awards will be made on the items for delivery either from November, 1922, to June 30, 1923, or for the short time period named—either November and December, or December—but not for both.

State Executives in South Discuss Means To Avert Coal Crisis

In connection with the fuel shortage the governors of Louisiana, Mississippi, Tennessee, Florida, Alabama and Georgia discussed means to remedy the coal crisis in these states at a conference Nov. 15 at Montgomery, Ala.

Federal action to prevent a coal famine in the South has been taken by the Fuel Administration in Washington, according to a telegram made public by the Atlanta (Ga.) Chamber of Commerce from the National Fuel Board. Immediate relief from the coal shortage in Georgia and other Southeastern states was the end sought by the Fuel Administration in issuing instructions Nov. 13 to railroads of the country to supply the Louisville & Nashville R.R. with 4,000 cars with which to handle coal shipments to this section within the following ten days.

Ask President Harding to Call Conference Of Somerset County Miners and Operators

Washington, D. C., Nov. 20.—A delegation of striking miners from Somerset County, Pennsylvania, headed by J. J. Kentner, of Lock Haven, who is serving them as general counsel, called at the White House today to request the President to call a conference between operators and miners in Somerset County. At the White House a printed statement was distributed setting forth some of the points of the miners' contention.

Anthracite Operators Submit Suggestions to Commission, Pledging Co-operation in Collection of Data

The general committee of anthracite operators submitted its suggestions to the President's coal commission on Nov. 18. The text of the document follows:

This is a preliminary reply to your communication of Oct. 26. We have under consideration detailed replies on a number of topics with respect to which the commission desires information. This information will have to be collected, compiled and verified, and it is hoped that instructions as to its character and manner of presentation will issue from the commission. Until the necessary facts have been collected, it is not practicable to make any useful reply to that part of your letter which seeks our "carefully formulated views as to what efficient policy, if any, could or should be adopted by the government relative to the coal industry, having proper regard to the interests of the mine workers, the mine operators and the public."

The Committee of Anthracite Operators will co-operate with the commission to the fullest extent of its ability in securing information that the commission may desire. We suggest that a questionnaire be prepared for submission to each operator. If the commission desires, our committee will collaborate with it in the preparation of this questionnaire. We believe that all information submitted should be verified by the commission of its agents whenever verification is deemed necessary.

With respect to paragraphs (e) and (f) of your letter, which refer to the "acknowledged demoralization" of the coal industry and measures for eliminating elements responsible for this condition, we understand from you that this is not intended to apply to the anthracite industry, where regular employment and a supply of domestic size coal commensurate with, but rarely exceeding, the public's requirements is, and for many years has been, the unvarying condition except when production is suspended by strikes.

Nineteen Topics Answered Seriatim

We now deal seriatim with the list of nineteen topics accompanying your letter:

I. Ownership and titles of the mines—Information on this subject can be obtained by questionnaire in the manner already suggested.

II. Prices of coal—We assume that the inquiry with respect to prices will comprehend ascertainment of the price at the mine and the price paid by the consumer. Mine prices of coal for any period the commission may care to investigate are obtainable from the operators, while the retail price of coal may be ascertained by inquiry in the various localities where it is consumed.

It may be properly mentioned in this connection that the producer of anthracite generally sells his product at the mine. One of the many sources of misunderstanding with respect to anthracite prices is the great difference between the mine price and the consumers' price, the latter including, in addition to the mine price, expense of transportation and the charges of middlemen and retail dealers, over which the operators have no control. Naturally the commission will investigate all of these items.

III. The organizations and persons connected with the coal industry—Data with respect to this subject may be obtained by the suggested questionnaire.

IV. Cost of production—This subject is, of course, one of the most difficult with which the commission will have to deal. Anthracite operations vary widely with respect to cost of production. They differ not only by districts but as to operations in the same district and even in immediately adjoining properties. A great many considerations, geographical, physical and economic, affect the cost of production. Generally speaking, the so-called company operations are upon owned lands, while many of the "individual" producers operate under short leases requiring more rapid amortization of the investment. Some leases require royalties in excess of $1 per ton on the "prepared" or domestic sizes, and an extreme case exceeds $2 per ton at the present time. This subject may well receive the consideration of your commission.

Difference in the relative proportions of the "prepared" and "steam" sizes produced (the latter being sold below the cost of production), and the resulting realization on their sales, represent another important factor in the anthracite problem.

These factors are mentioned not as inclusive but as typical of the many considerations that must be taken into account in arriving at conclusions on the cost of production and the prices obtained for anthracite.

V. Profits realized by operators or owners of said mines during the last ten years—In this connection it is suggested that the work of the commission may be facilitated by recourse to the information furnished by certain companies to the Federal Trade Commission covering the period from January, 1913, to Dec. 31, 1918, and by the analytical study of costs and profits made by the engineers of the United States Fuel Administration. Supplementary information to bring these data down to date can be obtained by the questionnaire method.

VI. Profits of other persons or corporations having to do with production, distribution or sale of coal—With respect to this subject the operators can be of little assistance to the commission, except in so far as coal-producing companies perform the functions of sale and distribution or have relations with other companies that perform these functions.

VII. Labor costs—All of the producers of anthracite are in a position to supply the commission with the labor costs of producing coal. These costs are kept in such manner as to be obtainable through the questionnaire.

VIII. Wages paid—The wage rates paid in the anthracite industry have for many years been fixed by agreement. The rates of pay, as well as the daily, monthly and yearly earnings of the miners and other mine workers in the anthracite field have been carefully tabulated by the operators and are matters of record, ascertainable by the commission. All supporting data compiled by the anthracite companies is open to the commission. In addition, surveys of anthracite wages and earnings have been made by the United States Bureau of Labor Statistics and the National Industrial Conference Board. The results of these surveys are a matter of public record.

IX. Wage contracts—This committee will be pleased to supply your commission with printed copies of all agreements with the anthracite mine workers since 1902, as well as decisions of the Board of Conciliation interpreting these agreements.

X. Irregular production—There is little irregularity of production in the anthracite industry, except such irregularity as may be occasioned by holidays, legal and otherwise, strikes or accidental stoppages. The number of colliery starts is perhaps the best index to the regularity of anthracite production and the figures with regard to operation are available with respect to all companies.

XI and XII. Waste of coal, and suggestions as to the remedy for the same—This subject might, in a larger sense, comprehend the whole problem of the production and utilization of fuel and the production and transmission of power. We assume, however, that the commission is interested only in such waste of coal as may be under the control of the producers. We believe that the waste of coal in the mining of anthracite is negligible and not of sufficient moment to warrant investigation. Modern methods developed through engineering and technical skill in mining, reclamation and preparation have reduced waste to such an extent that the term "waste" no longer applies, except in such instances as are occasioned by burdensome legislation, notably the Kohler and Fowler mine cave acts recently enacted by the Pennsylvania Legislature, whereby otherwise available fuel has been rendered unavailable.

XIII. The conditions, generally under which coal is produced—Before making suggestions as to the method of investigating this topic, we should like to have the commission's interpretation of this heading.

XIV. Distribution—With respect to this question there is, we think, the opportunity for an investigation which will develop whether improvements and economies can be effected in the present methods of distribution. The distribution problem is not uniform in different localities and seasons, and the demand for the different sizes of coal varies. The investigation to be useful must be comprehensive.

Operators Promise to Submit Special Memorandum

XV. The causes which from time to time induce strikes, thereby depriving interstate carriers of their fuel supply and otherwise interrupting the flow of interstate commerce—At a later date the operators will submit to the commission a special memorandum upon this subject. While the immediate cause of general strikes is obviously a dispute between the employers and the employees as to rates of wages and conditions of employment, there are conditions especially affecting the anthracite industry, and differentiating it from the bituminous industry, of which the commission should be fully advised.

In order that the labor problems which induce strikes may be considered on their respective merits, it is absolutely necessary that the anthracite industry be regarded as separate and autonomous, otherwise it will in the future, as it has in the past, become the victim of conditions and disputes with which it is in no way concerned.

XVI. All facts, circumstances, or conditions which would be deemed helpful in determining and establishing a wise and efficient policy by the government relative to said industry—This subject has not, as yet, had the consideration which would warrant us in submitting our reply to you at this time.

XVII. Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which by reason of their natural limitations, or other conditions, fall below the standard—As pointed out above, there are considerable differences between the costs of production in various anthracite operations. It should be said in this connection, however, that there is rarely in any one year a surplus of domestic anthracite, and that it is necessary not only to permit but, in emergencies such as at present exist, to encourage production by those operations which are relatively high cost.

XVIII. Ascertaining and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts and standardizing also as far as practicable the amount of work a man shall perform for a reasonable wage, recognizing the value and effect of such surroundings in respect of their efficiency—We are unconvinced of the wisdom or practicability of attempting to standardize the cost of living for individual workers, or of standardizing the amount of work they are to perform, since such standardization would necessarily ignore individual abilities and requirements. Human beings cannot be standardized.

Neither the wages of mine workers nor of any other groups of workers can be considered independently of other wages. At the present time mine workers are receiving a scale of wages far above that paid in other industries, with the result that the workers in these other industries are paying tribute to the mine workers. Continuation of such a condition cannot fail to have disastrous results upon the anthracite industry, and therefore upon those employed in it.

XIX. Standardizing a basis of arriving at the overhead cost of producing and distributing the coal, including delivery at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners should be the first and irreducible item of expense—Since this heading groups unrelated matters, we suggest more definite information from the commission as to its wishes.

Additional suggestions—We understand that the law contemplates, in its investigation of the anthracite industry, special and independent consideration of the relationships between the mine operators and the mine workers, thereby recognizing our conviction that the conditions in the anthracite industry in this respect differ from the bituminous industry and call for separate treatment. The labor problem of the industry is one of the most important to be considered and especially so by reason of the serious loss and inconveniences to the public which have been

caused by the cessation of mining during five months of the present year.

For twenty years prior to 1922 the producers of anthracite have dealt upon an established basis with their employees and the organizations representing them, through the medium of conference and agreements. A Board of Conciliation, established by the Roosevelt Commission of 1902, has been continuously in existence and has been exceedingly helpful in mediating grievances arising under the agreements.

We suggest that the commission should ascertain the labor policy of the operators and should likewise ascertain the labor policy of the United Mine Workers with respect to the anthracite industry, including their fundamental aims, the methods pursued by them and the extent, if any, to which the policy of either is detrimental to the industry and therefore to the interest of the public.

It is earnestly hoped that the commission's investigation of the labor problem shall be of such a searching character, and its final report and recommendations so definite and constructive, that a new agreement policy may be reached by which a repetition of the cessation of mining may be avoided, with justice alike to the industry, to the mine workers and to the public.

The above summary reply to your inquiry will, we trust, be taken as an earnest of our desire to co-operate with the commission to the fullest extent within our power. Some of the subjects to be investigated by the commission are of such a character as to require lengthy study, and in connection with these matters the Committee of Anthracite Operators will be pleased to hold itself at the command of the commission at such time and in such manner as the commission may desire.

Improved Mine Rating and Car Distribution May Result from Assigned-Car Hearing

Indications are that the Interstate Commerce Commission is not convinced that assigned cars for railroad fuel should be abolished. There is reason to think, however, that as a result of the hearings now in progress important improvements will be ordered in the mine-rating and car-distribution rules.

The National Coal Association is contending vigorously and unqualifiedly for the absolute discontinuance of the assignment of cars for railroad fuel without charging or counting them against the mine's distributive share. John Callahan, who is in charge of the case for the National Coal Association, contends that assigned cars discriminate unjustly against those operators who do not enjoy the privilege of this preferential car supply. He maintains that it is unfair to mine workers and is a frequent source of labor troubles when a disproportionate part of the car supply is furnished certain mines, thereby making it necessary for other mines to work only part of the time, sometimes as little as one day a week. This forces up costs in the irregularly operated mine, which means higher priced coal to the public.

The National Coal Association also asserts that the mine-rating and car-distribution rules should be filed as tariffs. If this were done, compliance with them would become a matter of law. At present these rules are interpreted in a varying manner on different roads and on the part of different railroad officials. The National Coal Association seeks uniformity in their application on all railroads. They contend that the railroads buy coal with cars and money.

The railroads are emphasizing their contention that to deny them the assigned-car privilege would add staggeringly to their costs. Apparently this argument has impressed the commission.

Supreme Court Hears Arguments Against Mine-Cave and Coal-Tax Laws

Constitutionality of the Kohler mine-cave law and the anthracite tax, both enacted by the Pennsylvania Legislature, was sharply attacked in the U. S. Supreme Court, Nov. 13 and 14. Three judges were absent—Justices Vandevanter, Day and Pitney. Justice Day retired from the Court Nov. 14 and Justice Pitney is expected to be retired by Congress when it reconvenes this week. This left only seven judges to hear the cases. This is significant in view of the fact that the court frequently orders cases reargued before a full bench.

H. S. Drinker, Jr., attacked the mine-cave law, arguing that it impairs the obligations of contracts, takes property without due process of law, is not a bona fide exercise of police power and that if surface support in the anthracite districts is necessary for public use it can constitutionally be acquired by condemnation with compensation to the parties affected. John W. Davis, former Ambassador to Great Britain, declared the law to be "undisguised patent confiscation of property." H. J. Mahon, W. L. Pace, George R. Hull and Attorney General G. E. Alter, of Pennsylvania, defended the law.

The anthracite tax law was declared to be unconstitutional by H. S. Drinker, Jr. The Attorney Generals of New York, New Jersey, Massachusetts, Maine, New Hampshire, Vermont, Rhode Island, Connecticut and Delaware, in a brief which the court considered, contended that the law is an attempt to levy tribute upon the citizens of their states by taxing anthracite, 80 per cent of which is being shipped outside of the state. Lewis Marshall and J. Weston Allen opposed the law, which was supported by Attorney General Alter.

Ohio Dealers' Margins Revised

Following audits of various retail concerns in the larger centers of population of Ohio, C. J. Neal, State Fuel Administrator, has announced a revised list of dealers' margins covering many points. Under the new schedule, which followed protests made by retailers through the M.-O.-I. Coal Association, increases were made in quite a few instances. Likewise some reductions were made, especially in the rural sections. The total average change made by the new list is an increase of approximately 25c. per ton in cities and 8c. a ton in rural districts.

The new margins went into effect Nov. 18.

Reductions under this scale are: Mahoning County, 45c.; Erie, Summit, Medina, Stark and Summit Counties, 40c.; Wayne County, 35c.; Ashland, Clark and Trumbull Counties, 20c.; Columbiana, Darke, Fairfield, Greene, Knox, Lake, Lorain, Pike, Richland, Ross, Sandusky and Williams Counties, 15c.; Logan, Seneca and Madison Counties, 10c.; Fulton, Marion, Miami and Van Wert Counties, 5c.

Cities where increases have been allowed include: Steubenville, 72c.; Toledo, 60c.; Portsmouth, 53c.; Delaware, 50c.; Marietta, 48c.; Hamilton, Middletown, Springfield, Dayton and Canton, 40c.; Findlay, 35c.; Youngstown and Akron, 30c.; Lima, Columbus and Marion, 25c.; Bucyrus and Mansfield, 20c.; Sandusky, 10c.

Cleveland Retailers to Test Neal Ruling

Cleveland retailers have filed a suit in the Ohio Supreme Court asking a review of State Fuel Administrator Neal's ruling on retail margins as it affects that city. The suit was filed by twelve retailers who recently petitioned Administrator Neal for a revision of the $2.75 margin allowed in Cleveland and suburbs. In the petition it is asserted that Administrator Neal in refusing to increase the margin acted contrary to law and the evidence submitted in the hearing. It is claimed that the margin is unreasonable and unjust. The Supreme Court is asked to modify the ruling.

Retailers Invited to Present Data

The National Retail Coal Merchants' Association has been invited to meet with the U. S. Coal Commission on Saturday, Nov. 25. The commission is desirous of learning more regarding distribution and retailing of coal.

There will be a meeting of the members of the Governmental Relations and the Anthracite and Bituminous Trade Relations Committees of the association on Thursday and Friday, Nov. 23 and 24, at the Shoreham Hotel, Washington, D. C., when matters for presentation to the commission will be considered.

Railroads Volunteer to Co-operate

The railroads of the country tendered their complete cooperation to the U. S. Coal Commission in a letter sent Nov. 4 to John Hays Hammond, the chairman of the commission, by R. H. Aishton, president of the American Railway Association. The rail carriers, the letter points out, are the largest users of coal and therefore are vitally interested in the economic problems of the coal industry, not only from the standpoint of the consumer but also from that of the distributor.

Miners' Union Opposes Standardization of Mines, Living Costs and Amount of Work Performed

A committee composed of Ellis Searles, John Moore and Thomas Kennedy, representing the United Mine Workers of America, sent the following communication, under date of Nov. 18, to the United States Coal Commission:

In this communication the United Mine Workers of America desire to submit further suggestions in response to your letter to us dated Oct. 23. We have already, in previous communications, covered Topics 1 to 16, inclusive, except Topic No. 3, which is covered in this letter, together with Topics No. 17, 18 and 19.

17. *Standardizing the mines upon the basis of their economic productive capacity and regarding the closing down of mines which by reason of their natural limitations, or other conditions, fall below the standard.*

If the proper kind of competition among operators of coal mines can be established and maintained through the efforts of this commission no standardization will be necessary. Competition would itself eliminate the high-cost mines, because they would be unable to compete in price of their product with those mines in which the cost of producing coal is lower. We believe this idea, properly applied and fairly carried out, would not only reduce the number of mines and the number of miners in this country but it would also give the American public assurance of cheaper coal, because the coal would then be produced by those mines whose output is produced at a low cost per ton. In addition to keeping down the price of coal to the consumer, because it comes from low-cost mines, such competition would close many high-cost mines and thus conserve their resources for the future. We believe conservation of our coal resources is one of the most important propositions to which the American people should give their attention. There will come a time when coal will be less plentiful than it is now and the population of the United States will be much greater, thus calling for a heavier supply of fuel. Anything this commission can do toward conservation of coal for future generations should be done.

It would manifestly be unconstitutional for this government to attempt to eliminate any number of coal mines from operation by any sort of selective process. It could not assume to say to any mine owner: "You shall not be permitted to operate your property," and at the same time permit some other owner to continue operation of his mine. Nor could the government legally or constitutionally say to any miner: "You must quit mining coal and get another job," and then allow another miner to continue at mining coal. Therefore, we have no suggestions to offer in regard to the possibility of closing down any number of mines, unless this end can be brought about through the means of encouragement of open competition among coal producers.

In order that such competition might be encouraged and aided we suggest that every possible effort should be made to improve transportation facilities and the most efficient utilization of the transportation systems of the country. A way should be found to enable the railroads to equip themselves with a sufficient number of coal cars and locomotives with which to move the coal from mine to consumer. This commission will, in our opinion, accomplish great good if it can find a basis upon which to predicate a recommendation of a method by which this feature of the nation's transportation problem can be solved with equitable freight rates.

We do believe, however, and we recommend to this commission, that some means or method should be found to prevent the opening up of any new mines in the United States, at least for a considerable period of time. There are too many mines in this country now. If the mines now in operation or that are ready for operation were run to their capacity they would produce at least 40 per cent more coal than is required to meet all requirements of domestic and export trade. There is no need for any more new mines. Because a set of men own a railroad is no good reason why, under such conditions as exist today in the industry, they should be permitted to open up a lot of new mines merely to supply business and revenue to their railroad. Yet this is what happens continuously, and it accounts for much of the dislocation and confusion that exists in the coal business.

18. *Ascertaining and standardizing the cost of living for mine workers and the living conditions which must be supplied or afforded in order to surround the workmen with reasonable comforts and standardizing also as far as practicable the amount of work a man shall perform for a reasonable wage, recognizing the value and effect of such surroundings in respect of their efficiency.*

How this commission can hope to standardize the *cost* of living without at the same time standardizing the *level* of living of mine workers is beyond the comprehension of this committee. It seems to us that it would be impossible to standardize the cost of living unless each individual mine worker was required to accept and adopt a standard, identical level of living for himself and his family. Any attempt to establish such a standard or to fix a maximum or minimum limit to what the individual man might wish to adopt for himself as his level of living would out-soviet any system, either paternalistic or communistic, that we know of. We are unable to offer any suggestion about "standardizing the cost of living for mine workers." It would be easy enough for experts to prepare a budget showing the amount of food, clothing, etc., that is necessary to maintain a family of a given number of members on a level of decency and comfort, but it would be impossible to standardize the cost of such budget. Flour that sells for $1 at one place sells for $1.25 at another place. Sugar sells for 6c. a pound at one place and 7c. a pound at another place. Gasoline sells at 20c. a gallon in Indiana and 24c. a gallon in the District of Columbia, though why we do not know. How could anyone hope to standardize the cost of living under such conditions?

We believe it is important, however, that this commission ascertain the cost of living for mine workers, as suggested in Topic No. 18. We suggest that this could best be done by the employment of women investigators. Let these investigators go directly to the miner and his wife and learn from them the actual facts about their cost of living. They are the ones who spend the money and they are the ones who know what it costs them to live. We do not believe the commission should rely too heavily upon any showing that might be made by company stores as to the cost of living of mine workers. The best place to get information is the place where the information actually exists, and in this instance the miner's home is the place. Your women investigators should delve into the mode of living as well as the cost of living. They could see for themselves the kind of food and the quantity of it that is supplied to the family. They could see the kind and quality of the clothing of the family and ascertain whether the quantity was ample. The miner's wife would not hesitate to talk on such matters with a woman, but she would, naturally, be reticent in her discussion of the subject with a man investigator. Let your woman investigator ascertain whether the miner's wife is contented or unhappy over her condition and why. Do her children attend school regularly, or are they compelled to stay at home because of a lack of clothing, shoes or books? Are the children healthy or undernourished? If undernourished, what is the reason?

These are some of the human factors that enter into the subject and that are vitally affected by the cost of living and the ability of the miner to earn a sufficient income to meet this cost of living.

Hold It Impossible to Standardize Amount of Work

Standardizing the amount of work a man should perform.

We do not believe it is possible to standardize the amount of work a man can or should perform in the production of coal. Conditions vary in the various mines and workings. Seams of coal differ in thickness. It is easier to mine coal in some mines than in others. Some mines experience great difficulty with water, gas and other conditions. And so it goes, each mine being peculiar unto itself, as far as working conditions are concerned. Methods in use in one mine would be impossible in many other mines. Therefore, we do not see how the work could be standardized.

Again, there is no need of standardization, as far as the actual miner is concerned, nor for its effect upon the cost of production, because the miner is paid by the ton for the coal he produces and not by the day or hour. Therefore, the amount of his daily output is not important, in so far as it affects the cost per ton. It is also true that the labor performed by men who are paid by the day varies greatly in different mines and fields, and what might be regarded as a standard of work in one place would be a flagrant misfit in another mine. However, the commission will find that the miners of this country are earnestly interested in everything that promises a better method for the performance of their work, and anything that will promote their safety and security.

19. *Standardizing a basis of arriving at the overhead cost of producing and distributing the coal, including delivery at the door of the consumer, recognizing in this compilation that the standardized cost of living to the miners should be the first and irreducible item of expense.*

On the subject of how to arrive at the overhead cost of producing and distributing coal we have no suggestions to offer, because this is a feature of the coal industry with which the miners have nothing to do.

3. *The organization and persons connected with the coal industry.*

In one of our previous communications we advised the commission that we desired to postpone consideration of Topic No. 3, "The organization and persons connected with the coal industry," until we could get a better understanding of what was meant to be covered by this topic. This subject appears to us to be a broad one, calling for much detailed information. It would contemplate, we believe, a study of all organizations and associations having any connection with the ownership, production, distribution and sale of coal. Under this heading the subject of absentee ownership of coal lands and coal mines could properly be investigated and the effect of such absentee ownership upon the industry and the public welfare could be determined. We believe the cold-blooded commercialism involved in absentee ownership is such a serious evil in the coal industry that if this commission uncovers it and tells the public just how the selling price of coal is affected by it the commission will lay bare a factor that helps to keep the price of coal to the consumer at a higher figure than would be the case under any other circumstances. The public wishes to know why it is required to pay outrageous prices for coal. We suggest that a study of absentee ownership will disclose one of the causes of this gouge.

The United Mine Workers of America is the trade union of the coal miners of this country. It has a membership in the bituminous and anthracite branches of the industry of more than half a million, scattered over the entire coal-producing area of the country. We shall be pleased, indeed, to supply the commission with any and all information in regard to the United Mine Workers of America that the commission may call for. This organization has no secrets and nothing to withhold from the commission. If you will indicate at any time the information you desire we assure you that it will be supplied promptly and in full.

At the same time, we urge upon the commission that it also require all other organizations and associations to lay themselves open to the scrutiny of this commission. No association of coal operators should be permitted to withhold anything from the commission, nor should the commission permit any refusal on the part of any individual operator to supply full and complete information as to his business. It will be recalled that when on previous occasions, governmental agencies attempted to investigate certain phases of the coal business, certain coal-mining companies rushed off to a court and obtained injunctions preventing the government from ascertaining the desired information. We do not know what these coal companies were so anxious to hide and keep from the government and the public, but, apparently, they feared to have the light of publicity turned on their affairs and conduct. We suggest that this commission be constantly on the lookout for any similar move on the part of any coal operators in the present instance.

Coal Commission Begins Actual Collection of Data on Production Costs, Wages and Waste

By Paul Wooton
Washington Correspondent of *Coal Age*

While no comment has been forthcoming from any member of the U. S. Coal Commission, there is a feeling in official circles in Washington that the commission is entitled to more co-operation of an initiative type from both the bituminous operators and the United Mine Workers. There is a feeling that advantage was taken of Chairman Hammond's request for suggestions as to procedure, to get publicity, and that the reply was directed more to the newspapers than to the commission. It is the opinion of some that the bituminous operators and mine workers indulged in a lot of stock comment such as each side puts forward at every opportunity. Incidentally there is a feeling that the anthracite operators came close to complying with the spirit of the request. They made reply to the questions that were asked, and a first-page position in the newspapers apparently was not their objective. Some read into each of the replies an intimation that the industry is all right except for the need to correct the other fellow.

It is apparent that the commission has not won the wholehearted support of any branch of the industry. Each side has been politely receptive and certainly has shown no antagonism. Some are inclined to attach some blame to the commission itself for lack of progress and for failure to obtain more active co-operation. It is pointed out that the commission has not made it plain to either side as to just what they would attempt to do. This failure to be more specific may have had a bearing on the disinclination of either side to commit itself. Some officials were hopeful that the industry itself would take the initiative with the commission simply satisfying itself as to the correctness of the information laid before it. The mine workers have not offered to open their records to the commission and it will not be surprising if many operators fail to furnish the cost data called for by the commission's questionnaire.

A detailed questionnaire as to costs of producing coal in 1921 and 1922 is being sent to all operators, large and small. Since a large number of mines were closed during six months of 1922, information is requested as to shutdown costs. So far as is known, no previous effort has been made to obtain this information. The work on these returns will be under the immediate direction of David Wing, who conducted similar studies for the Federal Trade Commission. Several of the members of the Trade Commission's staff who worked with Mr. Wing during that time and who are thoroughly familiar with the handling of production cost data have been transferred temporarily to the commission's staff.

Commissioners Neill and Alschuler are to be personally responsible for the results of the field investigation dealing with the cost of living and with living conditions. Each of these commissioners will devote a portion of his own time to work in the field. Mr. Neill already has made one field trip.

Wage statistics will be under the immediate charge of Prof. Joseph H. Willits, who will be assisted by Miss Anne Bezanson, who has had wide experience in such work.

C. E. Lesher, who has charge of the engineering phases of the fact-finding work, is getting together an advisory committee of engineers and operating men. He has arranged for co-operation with the U. S. Bureau of Mines.

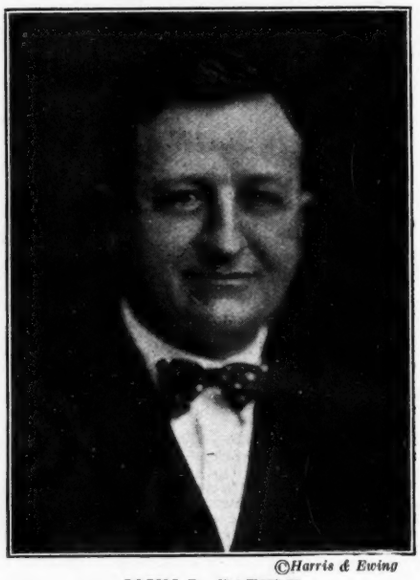
C. A. Allen, who serves the Bureau of Mines and the State of Utah jointly as a mining engineer, will be transferred temporarily to the commission to gather data with regard to waste in the production of coal. In this work George S. Rice, chief mining engineer of the Bureau of Mines, will assist in an advisory capacity. This will involve an examination of the percentage of recovery and the present available resources in the more important fields. There will be an intensive study of the more highly developed areas with the idea of ascertaining reserves and the amount of waste.

The study of retail costs and of the cost of distribution has not been launched as yet.

John D. Battle Appointed Traffic Manager Of National Coal Association

On Dec. 1 John D. Battle will become traffic manager of the National Coal Association, succeeding John Callahan, who has resigned to enter the coal-brokerage business in partnership with J. D. A. Morrow.

Mr. Battle has had long and varied experience in railroading. He was born in Greene County, Georgia, in 1887. He was successively telegraph operator, station agent and train dispatcher on the Georgia R.R. between 1904 and



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JOHN D. BATTLE

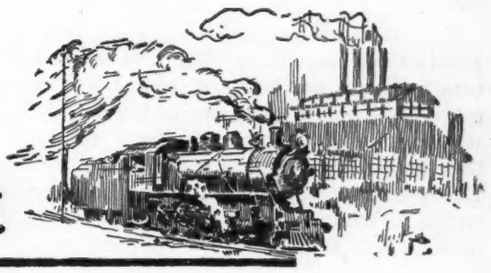
1911. From 1911 to 1918 he was with the Atlantic Coast Line and Charleston & Western Carolina joint terminals at Augusta, Ga.

He was connected with the car service division of the U. S. Railroad Administration at Washington from 1918 until the end of federal control of railways, handling the intensive loading and efficient use of freight cars. When the roads were returned to private ownership he became a traveling inspector for the American Railway Association. He was recalled to Washington in June, 1920, to direct the work of clearing up accumulations resulting from the switchmen's strike. Since Sept. 15, 1920, he has been assistant traffic manager of the National Coal Association.

Service Order No. 25 Modified

Service Order No. 25 has been suspended in part by the Interstate Commerce Commission in the territory south of the Potomac and Ohio rivers, with the exception of the lines of the Baltimore & Ohio in that territory. The amendment, effective on Nov. 18, removes the general priority in the use of open-top equipment for coal, but does not affect the original order for priority in the movement of coal. This action allows a greater use to be made of open-top cars for the transportation of road and building materials.

Production and the Market



Weekly Review

Spot buying is being done very quietly. The usual November snap is lacking, however, and a cold spell is urgently needed to bolster the trade. Domestic sales, while still strong, have felt the effect of the continued warm weather and prices have slackened a trifle. Day-to-day buying is still the only activity in the steam market, but that this is increasing in the face of steadily increasing production is shown by the recent trend in prices.

Coal Age Index of spot bituminous prices registered an increase this week for the first time since Sept. 25. The index number rose to 343 on Nov. 20, as compared with 340 this week before, 344 on Nov. 6 and 346 on Oct. 30. The average mine price corresponding to the index is $4.15.

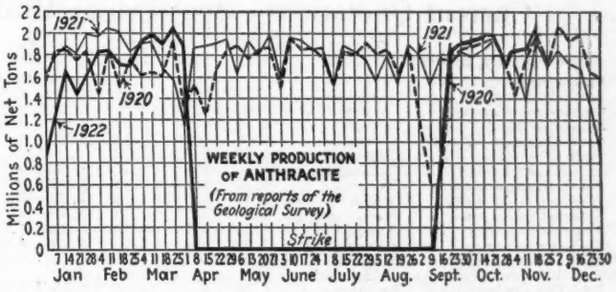
The increase resulted from unexpected strength at Hampton Roads and on good grades in central Pennsylvania. There is plenty of coal at the Roads but it is held by a large number of shippers and the market has been artificially strengthened by orders placed to piece out cargoes for tonnage waiting at the piers. High-grade fuels from central Pennsylvania are very scarce, and prices, which have held steadily for some time, are climbing slowly upward.

Only Low-Quality Coals Lack Ready Market

It is only the lower grade fuel that is feeling the want of a ready market. Consumers are willing to pay for quality and dispatch. Thus the market is divided between those who must push their coals, sometimes at concessions, and those whose main efforts are now directed toward the delivery rather than the sales factor.

Middle West markets are quietly absorbing more steam coal. This slight pickup, however, has been met so eagerly by producers that price betterment is almost imperceptible. Domestic sizes are somewhat softer as a result of warm weather. Retailers are unable to sell more than small lots and are slow to reorder. More and more mines throughout this and other sections are turning to domestic makes and this in turn is bound to affect the screening market. Railroads are buying steadily, convinced of the good values now offering and apparently realizing the transportation difficulties that are to come during wintry weather.

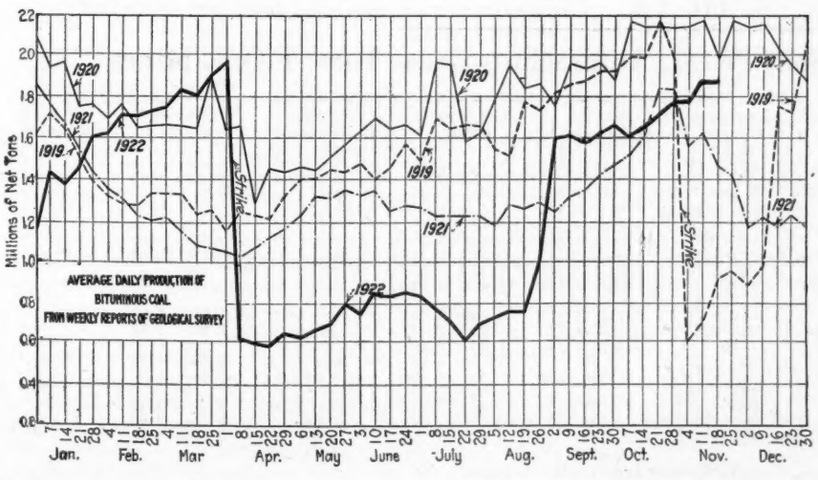
The Lake trade is drawing to a close. Dumpings are proceeding at the rate of 1,000,000 tons per week, but the movement will decline from now until the time when weather conditions stop cargo clearances. Many buyers



are waiting for the release of this tonnage, announcing their intention of taking on some stock when the offerings are increased by the diversion of Lake coal to commercial channels.

The Northwestern docks are feeling the keen competition of all-rail coals. Buying is increasing, but dock men are forced to shave their prices in the southern part of their territory. The Head-of-the-Lakes shippers feel these inroads keenly, as the curtailment of their territory increases their overhead and thus furthers the market advantage of the all-rail sellers.

Continued warm weather is providing a welcome delay in the matter of anthracite demand. Domestic sizes, of course, are in strong call, but there is no clamor for



Estimates of Production

(Net Tons)

BITUMINOUS

	1921	1922
Oct. 28 (*b*)	10,956,000	10,683,000
Nov. 4 (*b*)	9,327,000	10,688,000
Nov. 11 (*a*)	8,592,000	10,076,000
Daily average	1,612,000	1,832,000
Calendar year	354,209,000	332,668,000
Daily av. cal. year	1,335,000	1,249,000

ANTHRACITE

Oct. 28	1,751,000	1,804,000
Nov. 4	1,689,000	1,839,000
Nov. 11	1,350,000	1,863,000
Calendar year	38,845,000	79,917,000

COKE

Nov. 4 (*b*)	116,000	215,000
Nov. 11 (*a*)	103,000	245,000
Calendar year	4,715,000	6,051,000

(*a*) Subject to revision. (*b*) Revised from last report.

supplies such as will develop with cold weather. Substitute fuels are not being welcomed by householders, but as the anthracite shortage is a real one, cold weather will make their temporary use a necessity. Realizing this, certain operators are producing domestic sizes for Eastern consumption and out of these emergency shipments is likely to arise a domestic bituminous market in what has always been an anthracite stronghold.

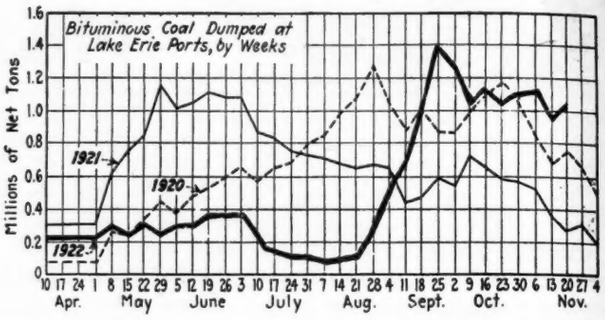
BITUMINOUS

"Preliminary estimates on production for the week ended Nov. 11, as revised by later reports reflecting the curtailed output because of election day and Armistice Day, put the total coal raised at 11,939,000 net tons," says the Geological Survey. "Early returns on car loadings at mines last week (Nov. 13-18) indicate 13,200,000 net tons, comprising 11,100,000 tons of soft coal and 2,100,000 tons of anthracite.

"Loadings of soft coal on Monday, Nov. 13, as reported by the railroads, totaled 44,902 cars. On Tuesday loadings declined to 33,843 cars, and by Thursday had declined further to 33,175 cars."

All-rail shipments to New England were 3,329 during the week ended Nov. 11, as compared with 2,924 cars in the week preceding. Prices on Pennsylvania grades have increased, but not much spot coal is moving to this territory.

Hampton Roads dumpings for all accounts were 202,000 net tons during the week ended Nov. 16, as compared with 248,637 tons during the preceding week. Coal supplies at the piers are running evenly but are spread over a large



number of houses and a stronger market has resulted because of buying orders placed by a few shippers who must piece out cargoes for tonnage waiting.

Lake dumpings during the week ended Nov. 20 were 1,005,789 net tons—966,535 tons cargo and 39,254 tons ves-

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F. O. B. Mines

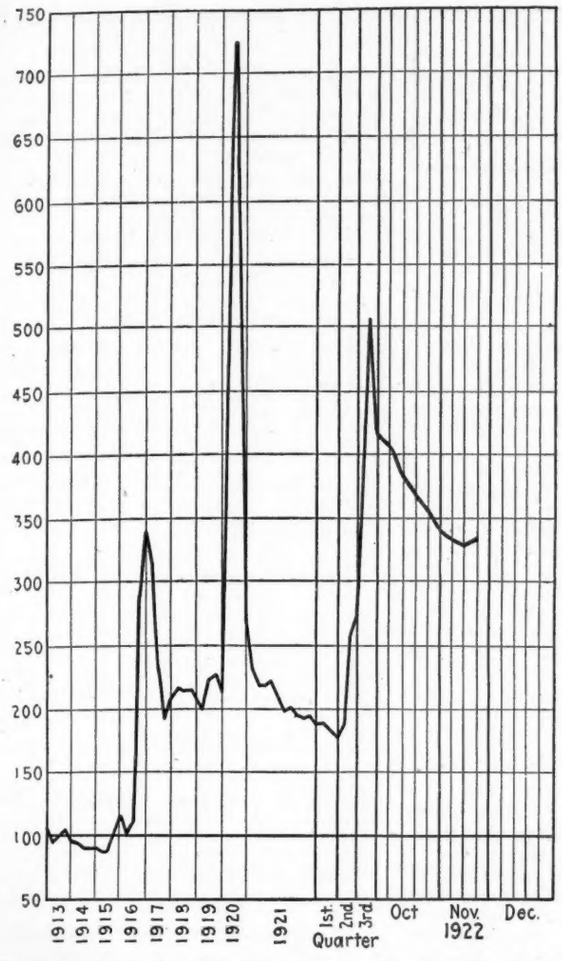
Low-Volatile, Eastern	Market Quoted	Oct. 23, 1922	Nov. 6, 1922	Nov. 13, 1922	Nov. 20, 1922†
Smokeless lump	Columbus	$7.10	$6.75	$6.85	*$6.50@$7.00*
Smokeless mine run	Columbus	6.25	6.00	6.25	*6.00@ 6.25*
Smokeless screenings	Columbus	6.00	5.50	5.85	*5.50@ 6.00*
Smokeless lump	Chicago	6.30	6.00	6.00	**6.00@ 6.50**
Smokeless mine run	Chicago	6.00	5.60	5.60	5.50@ 5.75
Smokeless lump	Cincinnati	6.30	7.00	6.00	6.00
Smokeless mine run	Cincinnati	5.55	6.10	6.10	6.00@ 6.25
Smokeless screenings	Cincinnati	5.30	6.25	6.25	6.00@ 6.50
*Smokeless mine run	Boston	7.10	6.85	7.10	**7.75@ 8.25**
Clearfield mine run	Boston	3.75	3.50	3.35	**3.50@ 4.25**
Cambria mine run	Boston	4.25	4.10	4.10	**4.00@ 4.75**
Somerset mine run	Boston	3.95	3.60	3.75	**3.75@ 4.50**
Pool 1 (Navy Standard)	New York	5.00	4.85	4.85	**4.50@ 5.50**
Pool 1 (Navy Standard)	Philadelphia	....	....	....	4.50@ 5.00
Pool 1 (Navy Standard)	Baltimore	5.00	4.50	4.50	**4.25@ 5.00**
Pool 9 (Super. Low Vol.)	New York	4.25	4.10	4.20	**4.00@ 4.50**
Pool 9 (Super. Low Vol.)	Philadelphia	4.35	4.30	4.30	**4.25@ 4.70**
Pool 9 (Super. Low Vol.)	Baltimore	4.35	4.00	4.10	*3.75@ 4.00*
Pool 10 (H.Gr.Low Vol.)	New York	3.85	3.50	3.50	**3.50@ 3.75**
Pool 10 (H.Gr.Low Vol.)	Philadelphia	3.60	3.50	3.50	**3.50@ 3.75**
Pool 10 (H.Gr.Low Vol.)	Baltimore	3.90	3.60	3.35	3.25@ 3.50
Pool 11 (Low Vol.)	New York	3.30	3.00	3.00	**2.90@ 3.25**
Pool 11 (Low Vol.)	Philadelphia	3.25	3.15	3.15	2.90@ 3.40
Pool 11 (Low Vol.)	Baltimore	3.55	3.15	3.05	3.00@ 3.15
High-Volatile, Eastern					
Pool 54-64 (Gas and St.)	New York	3.50	3.35	3.45	**3.25@ 3.75**
Pool 54-64 (Gas and St.)	Philadelphia	3.75	3.50	3.50	3.25@ 3.75
Pool 54-64 (Gas and St.)	Baltimore	3.60	3.35	3.30	3.25@ 3.40
Pittsburgh sc'd	Pittsburgh	5.05	4.50	4.50	4.50
Pittsburgh mine run (St.)	Pittsburgh	3.25	3.35	3.35	3.25@ 3.50
Pittsburgh slack (Gas)	Pittsburgh	3.60	3.60	3.60	3.50@ 3.75
Kanawha lump	Columbus	6.25	6.25	5.85	*5.50@ 6.00*
Kanawha mine run	Columbus	4.50	4.50	4.25	*3.50@ 3.75*
Kanawha screenings	Columbus	3.75	4.10	3.60	*3.25@ 3.50*
W. Va. lump	Cincinnati	6.10	6.00	6.10	*6.00*
W. Va. Gas mine run	Cincinnati	4.35	4.35	4.25	*4.00*
W. Va. Steam mine run	Cincinnati	3.35	4.00	3.75	*3.50@ 3.75*
W. Va. screenings	Cincinnati	3.65	4.00	3.75	*3.25@ 3.50*
Hocking lump	Columbus	5.25	5.50	5.50	*4.50@ 5.61*
Hocking mine run	Columbus	3.50	3.60	3.50	3.25@ 3.75
Hocking screenings	Columbus	3.25	3.05	3.00	2.75@ 3.25
Pitts. No. 8 lump	Cleveland	3.81	3.81	3.81	**3.75@ 4.30**
Pitts. No. 8 mine run	Cleveland	3.56	3.56	3.56	**3.50@ 3.75**
Pitts. No. 8 screenings	Cleveland	3.31	3.31	3.31	3.25@ 3.35
Midwest					
Franklin, Ill. lump	Chicago	5.30	5.35	5.35	*5.00@ 5.50*
Franklin, Ill. mine run	Chicago	4.50	4.10	4.10	4.00@ 4.25
Franklin, Ill. screenings	Chicago	3.25	2.60	2.60	2.25@ 3.00
Central, Ill. lump	Chicago	5.10	4.70	4.70	*4.25@ 4.75*
Central, Ill. mine run	Chicago	3.60	3.10	3.10	3.00@ 3.25
Central, Ill. screenings	Chicago	2.00	1.85	1.85	*1.75@ 1.90*
Ind. 4th Vein lump	Chicago	5.10	5.10	5.10	5.00@ 5.25
Ind. 4th Vein mine run	Chicago	4.35	3.85	3.85	3.75@ 4.00
Ind. 4th Vein screenings	Chicago	2.75	2.35	2.05	1.90@ 2.25
Ind. 5th Vein lump	Chicago	4.75	4.75	4.75	4.50@ 5.00
Ind. 5th Vein mine run	Chicago	3.75	3.60	3.60	3.50@ 3.75
Ind. 5th Vein screenings	Chicago	2.75	2.10	1.85	1.75@ 2.00
Standard lump	St. Louis	4.35	4.00	4.25	*3.50@ 4.00*
Standard mine run	St. Louis	2.75	2.60	2.50	2.50
Standard screenings	St. Louis	2.10	1.40	1.30	**1.25@ 1.50**
West Ky. lump	Louisville	5.00	4.85	4.75	*4.00@ 4.75*
West Ky. mine run	Louisville	2.45	2.50	2.55	*2.25@ 2.75*
West Ky. screenings	Louisville	2.10	1.85	1.75	*1.25@ 1.75*
West Ky. lump	Chicago	4.10	4.10	4.10	4.00@ 4.25
West Ky. mine run	Chicago	3.25	3.10	3.10	*2.75@ 3.00*
South and Southwest					
Big Seam lump	Birmingham	3.95	3.95	3.95	3.45@ 4.45
Big Seam mine run	Birmingham	2.60	2.35	2.35	2.25@ 2.50
Big Seam (washed)	Birmingham	2.75	2.60	2.60	2.50@ 2.75
S. E. Ky. lump	Chicago	5.50	5.50	5.50	**5.75@ 6.50**
S. E. Ky. mine run	Chicago	4.25	4.25	4.25	4.00@ 4.50
S. E. Ky. lump	Louisville	6.50	6.75	6.60	*6.00@ 7.00*
S. E. Ky. mine run	Louisville	3.85	4.25	4.25	*3.75@ 4.25*
S. E. Ky. screenings	Louisville	4.10	4.25	4.00	3.75@ 4.25
S. E. Ky. lump	Cincinnati	6.75	6.25	6.25	**6.00@ 7.00**
S. E. Ky. mine run	Cincinnati	3.85	4.00	3.85	*3.50@ 4.00*
S. E. Ky. screenings	Cincinnati	3.60	3.85	3.60	*3.00@ 3.50*
Kansas lump	Kansas City	5.75	5.75	5.75	5.50@ 6.00
Kansas mine run	Kansas City	3.75	3.75	3.75	3.50@ 4.00
Kansas screenings	Kansas City	2.50	2.50	2.50	2.50

* Gross tons, f.o.b. vessel, Hampton Roads.
† Advances over previous week shown in **heavy type.** declines in *italics.*

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Latest Pre-Strike Independent	Latest Pre-Strike Company	Nov. 13, 1922 Independent	Nov. 13, 1922 Company	Nov. 20, 1922† Independent	Nov. 20, 1922† Company
Broken	New York	$2.34	.....	$7.60@$7.75	$9.00	$7.75@$8.15	$9.00	$7.75@$8.15
Broken	Philadelphia	2.39	$7.00@$7.50	7.75@ 7.85	.....	7.90@ 8.10	.....	7.90@ 8.10
Egg	New York	2.34	7.60@ 7.75	7.60@ 7.75	9.25@10.50	7.75@ 8.35	9.25@10.50	7.75@ 8.35
Egg	Philadelphia	2.39	7.25@ 7.75	7.75	9.25@ 9.75	8.10@ 8.35	9.25@ 9.75	8.10@ 8.35
Egg	Chicago*	5.09	7.50	6.90@ 7.40	12.50@13.00	6.90@ 8.25	12.50@13.00	6.90@ 8.25
Stove	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	9.25@10.50	8.00@ 8.35
Stove	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Stove	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.15@ 8.25	12.50@13.00	7.15@ 8.25
Chestnut	New York	2.34	7.90@ 8.20	7.90@ 8.10	9.25@10.50	8.00@ 8.35	9.25@10.50	8.00@ 8.35
Chestnut	Philadelphia	2.39	7.85@ 8.10	8.05@ 8.25	9.25@ 9.75	8.15@ 8.35	9.25@ 9.75	8.15@ 8.35
Chestnut	Chicago*	5.09	7.75	7.20@ 7.60	12.50@13.00	7.15@ 8.25	12.50@13.00	7.15@ 8.25
Range	New York	2.34	.....	.....	.....	8.15	.....	8.15
Pea	New York	2.22	5.00@ 5.75	5.75@ 6.45	6.20@ 8.00	6.15@ 6.20	**7.00@ 8.00**	6.15@ 6.20
Pea	Philadelphia	2.14	5.50@ 6.00	6.10@ 6.25	7.00@ 7.40	6.15@ 6.20	**7.00@ 7.50**	6.15@ 6.20
Pea	Chicago*	4.79	6.00	5.60@ 6.10	7.00@ 8.00	5.49@ 6.03	7.00@ 8.00	5.49@ 6.03
Buckwheat No. 1	New York	2.22	2.75@ 3.50	3.50	3.25@ 4.00	4.00@ 4.25	**3.50@ 4.25**	4.00@ 4.25
Buckwheat No. 1	Philadelphia	2.14	2.75@ 3.25	3.50	3.25@ 4.00	4.00	3.25@ 4.00	4.00
Rice	New York	2.22	2.00@ 2.50	2.50	1.60@ 3.00	2.75@ 3.00	*1.50@ 3.00*	2.75@ 3.00
Rice	Philadelphia	2.14	2.00@ 2.50	2.50	2.00@ 2.75	2.75@ 3.00	2.00@ 2.75	2.75@ 3.00
Barley	New York	2.22	1.50@ 1.85	1.50	0.75@ 1.50	2.00	**0.50@ 2.00**	2.00
Barley	Philadelphia	2.14	1.50@ 1.75	1.50	1.00@ 1.75	2.00	*0.75@ 1.75*	2.00
Birdseye	New York	2.22	.....	2.00@ 2.50	.....	2.25	.....	2.25

* Net tons, f.o.b. mines. † Advances over previous week shown in **heavy type,** declines in *italics.*



Coal Age, Index 343, Week of Nov. 20, 1922. Average spot price for same period, $4.15. This diagram shows the relative, not the actual prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the U. S. weighted in accordance first with respect to the proportions each of slack, prepared and run-of-mine normally shipped and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913-1918," published by the Geological Survey and the War Industries Board.

sel fuel—as compared with 987,430 tons in the preceding week. The movement for the season to date now stands at 17,571,005 tons, as compared with 22,625,575 tons during the corresponding period of last year. Market conditions in the Northwest are easy and all-rail coal is invading the southern part of the dock territory.

TIDEWATER SHIPMENTS FOR OCTOBER, 1922
(In Net Tons)

Destination Coastwise to	New York	Philadelphia	Baltimore	Hampton Roads	Charleston	Total
New England.	120,000	45,000	45,000	654,000	4,000	868,000
Exports.....	.....	22,000	8,000	57,000	8,000	95,000
Bunker.....	169,000	21,000	15,000	119,000	1,000	325,000
Inside capes....	.....	143,000	111,000	90,000	.....	324,000
Other tonage...	379,000	.....	7,000	228,000	4,000	618,000
Total.....	668,000	231,000	186,000	1,128,000	17,000	2,230,000

ANTHRACITE

Production of anthracite during the week ended Nov. 11 is estimated at 1,863,000 net tons. Mines are producing to the limit of capacity in an endeavor to avert a serious shortage of domestic sizes, and in this they are aided by the unseasonably warm weather. Every effort is being made to push coal to the Lakes before the winter closes in. Dumpings spurted to 151,450 tons last week, as compared with 99,000 tons in the preceding week. The shipping season has been extended to Dec. 15, in an effort to make up as much of the deficiency as is possible.

Steam coals are still a drug on the market although buckwheat is now in a fairly comfortable position because of better takings as a substitute for the larger sizes.

Weekly Record of Car Loadings

	Cars Loaded All Cars	Coal Cars
Week ended Nov. 4, 1922	994,827	194,077
Previous week	1,014,480	197,928
Same week in 1921	837,576	177,006

How the Coal Fields Are Working

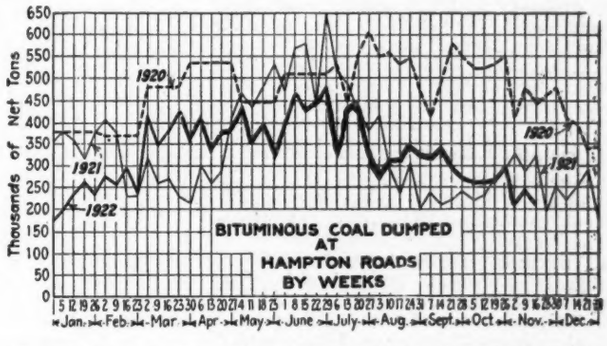
Percentages of full-time operation of bituminous coal mines, by fields, as reported by the U. S. Geological Survey in Table V of the Weekly Report.

	Six Months July to Dec., 1921	Jan. 1 to Apr. 1, 1922 Inclusive	Sept. 5 to Nov. 4, 1922 Inclusive	Week Ended Nov. 4, 1922
U. S. Total	45.6	55.7	....	....
Non-Union				
Alabama	63.5	64.6	84.3	81.7
Somerset County	55.5	74.9	36.9	31.5
Panhandle, W. Va.	55.3	51.3	57.4	54.8
Westmoreland	54.9	58.8	68.3	64.5
Virginia	54.8	59.9	58.5	62.3
Harlan	53.3	54.8	20.7	16.4
Hazard	51.7	58.4	15.0	20.9
Pocahontas	49.8	60.0	36.9	33.0
Tug River	48.1	63.7	32.4	37.8
Logan	47.6	61.1	25.2	30.7
Cumberland-Piedmont	46.6	50.6	33.8	24.3
Winding Gulf	45.7	64.3	30.5	31.6
Kenova-Thacker	38.2	54.3	41.9	51.0
N. E. Kentucky	32.9	47.7	27.5	29.9
New River	24.3	37.9	31.4	34.7
Union				
Oklahoma	63.9	59.6	64.5	71.5
Iowa	57.4	78.4	77.4	59.4
Ohio, Eastern	52.6	46.6	43.5	37.7
Missouri	50.7	66.8	70.7	77.1
Illinois	44.8	54.5	49.3	52.0
Kansas	42.0	54.9	57.2	43.7
Indiana	41.4	53.8	37.7	50.3
Pittsburgh†	41.2	39.8	48.5	72.4
Central Pennsylvania	39.1	50.2	59.9	50.6
Fairmont	35.3	44.0	41.7	41.9
Western Kentucky	32.5	37.7	32.2	38.0
Pittsburgh*	30.4	31.9	42.9	39.4
Kanawha	26.0	13.0	14.9	14.8
Ohio, southern	22.9	24.3	37.7	37.6

* Rail and river mines combined.
† Rail mines.

COKE

Production of beehive coke increased to 245,000 net tons during the week ended Nov. 11, as compared with 215,000 tons in the preceding week. The improvement was general in all the Eastern coke-producing districts. The Connellsville market is softer. Spot offerings have increased as the active furnaces are generally already covered for their requirements and pig iron is so sluggish that coke buyers urge the imperative need of lower prices.



Union Miners on Jury at Herrin Trial

Selection of a jury to try the first six prisoners held for murder in connection with the "Herrin riot" of June 22 goes slowly on. There are now seven men sworn in to serve. Some of them are union miners. Members of the union which is defending the prisoners have been accepted in the face of the state's best efforts to guard against that. Judge D. T. Hartwell, presiding, has ruled that mere membership does not disqualify a man. The recent special union assessment, which operators are morally sure is for the Herrin prosecution though they cannot prove this, is being paid by every union man who goes on the jury. The venire from which the jurymen are being chosen is made up largely of miners—so largely in fact, that it is said five out of six are members.

Foreign Market And Export News

Heavy British Output Softens Market; Better Conditions in France

British production has again broken the year's record. The output during the week ended Nov. 4 was 5,423,000 gross tons, according to a cable to *Coal Age*, as compared with the high mark of the previous week, 5,388,000 tons. The heavy output has congested the docks and railways, and demand has softened considerably.

The export trade of Wales has made great progress. For the four weeks ended Oct. 27, 2,170,933 tons were shipped from Welsh ports, and satisfaction is found in the fact that present exports are to normal directions, whereas the somewhat fictitious returns of late have been due to the stimulation which the trade received from the temporary business with the United States.

Forward business in northern England is rather restricted for the moment, owing to exchange difficulties, and fewer contract sales are in evidence. The Norwegian State Railways are in the market for 15,000 tons of best steam coal to be shipped between now and the end of December, the Malmo Gas Works are inquiring for 6,000 tons of superior Durham gas coal to be delivered over next year, and the Vejle Gas Works invite tenders for 2,500 tons of gas coals, shipment during December. Several fairly substantial parcels of ordinary Durham bunker coals have been sold for delivery in monthly quantities over all next year at 21s. 6d. per ton, f.o.b., thus establishing a price basis for bunkering fuel which shipowners will note with interest.

Hampton Roads Supply Declines

Business continues dull, due to the inability of shippers to get coal in sufficient quantities to supply the trade. The scarcity caused the market to strengthen, while demand increased slightly to indicate a trend of business toward better conditions.

Coastwise movement is showing a slight improvement, as is the bunker business, although export trading is indifferent, scattering cargoes being consigned to the West Indies in small quantities.

French Mine Activity Increases

French coal markets are now more active and the Center and the Center and Southern fields themselves are showing much improvement. The high value reached by the sterling exchange is, of course, proving very helpful to French collieries.

Mines of the Nord and Pas-de-Calais have order books well filled up. In domestic coals, most of the collieries cannot now accept immediate orders. The present scarcity of sized coals is a consequence of the reduction of output in Belgium and in the north of France.

Many consumers in the southeastern part of France, who usually order British coals, have now gone to the Loire field for supplies. Such is notably the case for several gas works on the Mediterranean coast. Important orders of coke from Switzerland and Italy are also sent to the same field.

Coal Paragraphs from Foreign Lands

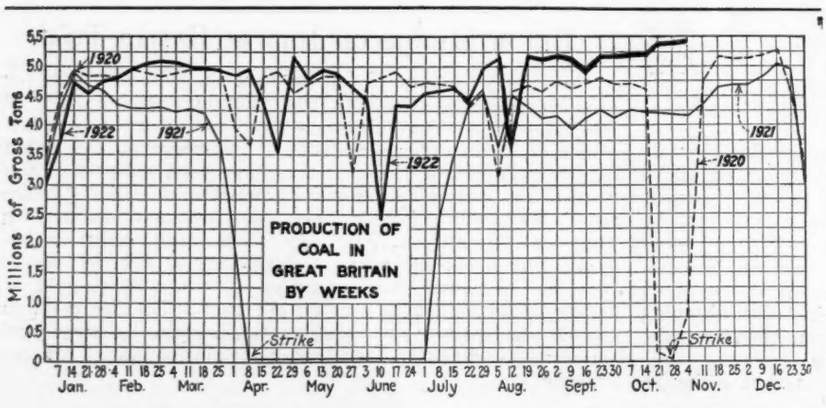
GERMANY — Production in the Ruhr region during the week ended Nov. 4 was 1,751,000 metric tons, according to a cable to *Coal Age*. The preceding week's output was 2,005,000 tons. Production during October was 7,144,228 tons, exceeding the September production by 1,100,000 tons. The coal production of Upper Silesia in October as compared with September shows an increase of 5 per cent, while the October production in the Central German coal area was about the same as in September.

ITALY—The price of Cardiff steam first is unchanged at 40s. 3d. on the Genoa market, according to a cable to *Coal Age*.

BELGIUM—On the Belgian coal market the same activity continues and production is still insufficient to meet demands.

CZECHO-SLOVAKIA — In the second quarter of 1922 the output increased by 155,690 tons as compared with the first quarter. This represents an increase of 2.11 per cent in output, although the number of miners at work was less by 1.98 per cent. The new conditions of the collective agreement entered into force on Sept. 1.

PANAMA COAL PASSAGES DURING SEPTEMBER were 8,371 gross tons, as compared with 41,175 tons in August and 16,040 tons in September, 1921. Coal on hand Oct. 1 was 117,880 tons, 4,000 tons less than stocks on Sept. 1. During this month, 9,611 tons of storage coal were received.


PRODUCTION OF COAL IN GREAT BRITAIN BY WEEKS
Millions of Gross Tons
1920
1922
1921
Strike
Jan. Feb. Mar. Apr. May June July Aug. Sept. Oct. Nov. Dec.

Hampton Roads Pier Situation

	Week Ended Nov. 9	Week Ended Nov. 16
N. & W, Piers, Lamberts Pt.:		
Cars on hand	611	509
Tons on hand	36,024	31,350
Tons dumped	72,425	67,736
Tonnage waiting	11,100	15,550
Virginian Ry. Piers, Sewalls Pt.:		
Cars on hand	829	840
Tons on hand	48,750	51,800
Tons dumped	90,261	81,662
Tonnage waiting	11,917	10,527
C. & O. Piers, Newport News.:		
Cars on hand	508	481
Tons on hand	25,400	24,050
Tons dumped	59,312	30,966
Tonnage waiting		80

Export Clearances, Week Ended November 16, 1922

FROM HAMPTON ROADS

	Tons
For Cuba:	
Nor. S.S. Solvang, for Havana	3,412
Amer. Schr. Tempate, for Banes	1,057
For Bahamas:	
Amer. Schr. R.R. Govin, for Nassau	594
For Atlantic Islands:	
Dan. S.S. Bryssell, for Guayabal	1,843

FROM PHILADELPHIA

For Cuba:	
Nor. S.S. Raynanger, for Havana	
Am. Schr. Wm. H. Marston, for Cienfuegos	1,169
For West Indies:	
Am. Schr., Albert F. Paul, for Fort de France	

Pier and Bunker Prices, Gross Tons

PIERS

	Nov. 11	Nov. 18†
Pool 9, New York	$7.50@$7.75	$7.50@$7.75
Pool 10, New York	7.00@ 7.50	*7.00@ 7.25*
Pool 11, New York	6.50@ 6.75	*6.25@ 6.75*
Pool 10, Philadelphia	7.15@ 7.65	*7.00@ 7.15*
Pool 11, Philadelphia	6.90@ 7.35	*6.60@ 6.80*
Pool 1, Hamp. Roads	7.40	**7.75@ 8.00**
Pools 5-6-7 Hamp. Rds.	7.40	**7.50@ 7.75**
Pool 2, Hamp. Rds.	7.40	**7.75@ 8.00**

BUNKERS

Pool 9, New York	$7.90@$8.15	7.90@ 8.15
Pool 10, New York	7.40@ 7.75	*7.40@ 7.65*
Pool 11, New York	6.90@ 7.15	*6.65@ 7.15*
Pool 10, Philadelphia	7.65@ 8.15	*7.30@ 7.40*
Pool 11, Philadelphia	7.40@ 7.90	*6.85@ 7.10*
Pool 1, Hamp. Rds.	7.50	**7.75@ 8.00**
Pool 2, Hamp. Rds.	7.50	**7.75@ 8.00**
Welsh, Gibraltar	38s f.o.b.	38s. f.o.b.
Welsh, Rio de Janeiro	57s. 6d. f.o.b.	57s. 6d. f.o.b.
Welsh, Lisbon	37s. f.o.b.	**50s.** f.o.b.
Welsh, La Plata	50s. f.o.b.	50s. f.o.b.
Welsh, Genoa	41s. t.i.b.	**42s.** t.i.b.
Welsh, Algiers	38s. f.o.b.	38s. f.o.b.
Welsh, Pernambuco	65s. f.o.b.	65s. f.o.b.
Welsh, Bahia	64s. f.o.b.	**65s.** f.o.b.
Welsh, Madeira	42s. 6d. f.a.s.	*40s.* 6d. f.a.s.
Welsh, Teneriffe	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Malta	41s. f.o.b.	41s. f.o.b.
Welsh, Las Palmas	38s. 6d. f.a.s.	38s. 6d. f.a.s.
Welsh, Naples	41s. f.o.b.	*39s. 3d.* f.o.b.
Welsh, Rosario	52s. 6d. f.o.b.	52s. 6d. f.o.b.
Welsh, Singapore	52s. 6d. t.i.b.	*50s. t.i.b.*
Welsh, Constantinople	52s. 6d. f.o.b.	*50s. f.o.b.*
Welsh, St. Michaels	50s. t.i.b.	50s. t.i.b.
Welsh, Port Said	49s. f.o.b.	49s. f.o.b.
Welsh, Oran	38s. f.o.b.	38s. f.o.b.
Welsh, Fayal	50s. t.i.b.	50s. t.i.b.
Welsh, Dakar	42s. 6d. f.o.b.	42s. 6d. f.o.b.
Welsh, St. Vincent	42s. f.a.s.	42s. f.a.s.
Welsh, Montevideo	50s. f.o.b.	50s. f.o.b.
Welsh, Alexandria		43s. f.o.b.

Current Quotations British Coal f.o.b. Port, Gross Tons

Foreign Quotations by Cable to Coal Age

Cardiff:	Nov. 11	Nov. 18†
Admiralty, large	28s.@28s.6d.	28s.@28s. 6d.
Steam, smalls	16s. @ 17s.	16s. @ 17s.
Newcastle:		
Best steams	25s. 3d. @ 27s.	25s.3d.@ 27s.
Best gas	24s. @ 25s.	24s@25s.
Best bunkers	23s. @ 24s.	*23s.* @*23s.*6d.

North Atlantic

Many Buyers Await End of Lake Shipping Season

Coal Will Be More Plentiful Hereabout Then, Is Belief—Some Producers, Finding Better Market With Hard Coal Scarce, Screen Lump Sizes to Fill Demand.

Lower-grade coals are freely offered, both on the spot and contract market. The better coals are firmly quoted, with little tonnage available. Deliveries are slow and uncertain and tonnage is being moved with little difficulty. The market, however, is still unsatisfactory for all except the consumer, who is able to obtain his currrent requirements—all that he is now buying—without causing any stiffening of the spot market.

Many buyers are awaiting the end of the Lake shipping season in the belief that more coal will then be offered in this section. There are scarcely any receipts of British coal. Certain producers report a better market because of the anthracite shortage and a number of them are now screening out the lump sizes to meet this demand.

BALTIMORE

The usual snap to a November market is totally lacking. The lack of demand is hard to explain even in the face of the fact that Baltimore was a bit more favored than some other localities to the distribution in October of more than 100,000 tons of English coals, and the movement during and just prior to that time of probably 100,000 or more tons which came by barge from Hampton Roads.

In relation to car shortage the weekly returns show that the run is not more than from 35 to 40 per cent on all roads. On one day the past week which can be taken about as an average, it was noted that the entire car supply on the B. & O. was 55 per cent. On the Connellsville division the supply was 27 per cent and on the Charleston division, 29 per cent. Several mines in the Somerset region last week reported on certain days that they had not received a single car.

PHILADELPHIA

If any one is satisfied in the soft coal trade it is evidently the consumer, who takes life easy in the confidence that he can get coal when he wants it, which is true to date. From the producing standpoint the old complaints of car shortage and unsatisfactory prices prevail. Possibly most shippers would admit that the prices are fair enough if they could produce coal anywhere near capacity. In the way of cars conditions are slightly better on the Pennsylvania, although there are some who complain bitterly of hardly any cars over a period of ten days.

There are occasionally reports of some producers willing to contract on coal of a Pool 9 grade at prices from $4@$4.25. Some arrangements on Pool 10 are also rumored, where considerable tonnage has been offered until April 1 at prices around $3@$3.25.

Market prices on high-grade coals are slightly firmer, while the low grades seem to have slipped a trifle. On the whole prdoucers are of the opinion, after following the market trend for the past week or so, that the lowest prices have been reached for the good coals.

There has been just the slightest tendency to betterment at Tidewater, at least there has been an increase in clearances, while bunkering holds its own.

CENTRAL PENNSYLVANIA

Production is gradually falling off, due in a large measure to a shortage of cars. The week ended Nov. 5 showed 18,594 cars. The week ended Nov. 12 fell to 17,287 and the week ended Nov. 19 will be considerably less. Unusual charges of discrimination are being made and there is much dissatisfaction.

The market is somewhat inactive. Unclassified coal is selling at $2.75@$3. Pools 15 and 18 are $3@$3.15; Pool 11, $3@$3.10; Pool 10, $3.75@$4; Pool 19, $4.50@$4.75; Pools 1 and 71, $5@$5.25.

There is some dissatisfaction in the district over the above ratings which may lead to new classifications. Some operators claim that grades of certain pools are better in some localities than others and that these ratings are unfair.

NEW YORK

There is a better feeling here. Demand is a trifle stiffer and quotations for the better grades show more strength. Prompt shipments are impossible. Car supply remains bad to which must be added poor motive power.

Producers have been rushing their coals to the West before the close of Lake navigation. When this takes place there promises to be a stronger demand along the seaboard by industrial users as well as by the railroads, who are not heavily stocked.

Buyers are cautious when making purchases and in many instances are buying from hand to mouth. However there has been a quiet accumulation in many quarters. Cold weather is the only solution of the situation, say many operators.

The number of cars at the local piers continues around 1,500, with comparatively little free coal being offered. This coal consists mostly of Pools 10 and 11.

Scarcely any foreign coal is coming here. Southern coals were quoted during the week on a basis of $7.40 f.o.b. Hampton Roads or about $8.40 New York. Some B. R. & P. coals were quoted around $3.65 f.o.b. mine during the week. Other prices are quoted in the Weekly Review.

FAIRMONT

Car shortage made itself felt to a very material extent during the week ended Nov. 11. Mines having Lake orders were given the preference in car supply. A disparity between Eastern and Western prices still exists, with mine run for Eastern delivery ranging $2.75@$3 and Western prices $3.75@$4.

UPPER POTOMAC

Loadings are still on a somewhat larger scale than the weekly average for 1921, with Upper Potomac mines getting out more tonnage than those in the Georges Creek and adjacent territory. Although the car shortage is affecting mines, producers are principally concerned now with market conditions, since there is not a ready sale in Eastern markets.

West

DENVER

In spite of an 18-in. blanket of snow and below zero weather, the *Denver Post* undercut retailers by lowering lignite in its "people's yards" 60c. to $6.35. The cold weather has livened up competition especially among lignite operators.

Reports reveal a movement among certain operators to bring suit against the railroads in Colorado before the I. C. C. for failure to deliver cars. One suits is said to have been filed by a Denver coal company. Members of the firm, however, deny the suit has been filed.

KANSAS CITY

The car shortage continues an irritant here. One operator reports less than 50 per cent production, with a strong demand for domestic sizes. Little hardship has resulted to the industrial users, although occasionally it has been necessary for them to accept other than their contract coal. Domestic deliveries are from two to four weeks behind and retailers are rationing their receipts.

Reports from Kansas and Missouri indicate that domestic buyers are still shying at the price, expecting a December break. While this simplifies the matter of supplying the present demand with a decreased car tonnage, it is thought to portend some difficulty later in the season unless the car situation improves. Kansas deep shaft lump is $6, nut, $5.50 and screenings, $2.50. There is some off-grade production quoted at 50c.@$1 under these prices. Arkansas semi-anthracite lump quotations range $6@$8.

SALT LAKE CITY

There is a brisk demand now as a result of the increasing severity of the weather. Stocks are low with probably not more than 7,000 tons in the city's yards. The car situation shows no signs of improving.

President Fernstrom of the dealers' association told the *Coal Age* correspondent he regarded the situation as serious. Many retailers have no coal and are trying to put their customers off until they can get shipments.

Anthracite

Unseasonable Weather Fends Off Clamorous Demand

Frigid Temperature Needed to Urge Buying of Substitutes—Some Bituminous Producers Screen Fuel in Anticipation — Push Movement to Lakes—Closing Date Deferred.

Mild weather remains the most favorable factor in the anthracite situation. Production is being pushed to capacity, but only the unseasonable temperatures prevailing have kept demand from becoming clamorous. Until consumers feel the urge of cold weather they will not buy substitutes to bridge the shortage, but, anticipating this, several producers of bituminous coal who ship to the East have made arrangements to screen their fuel. It is likely that a portion of the Eastern anthracite market, thus invaded, will become a permanent outlet for bituminous coal.

Every effort is being made to get coal to the Lakes before winter interferes. The closing date has been deferred to Dec. 15. During last week Buffalo dumped 151,450 tons, as compared with 99,000 tons in the previous week.

BALTIMORE

The hard coal situation continues to worry. In October the total shipment to Baltimore was 1,478 cars. To the middle of the month, according to estimates, the November receipts were around 500 cars. This leaves only 1,000 cars to be sent in the latter part of the month if the Baltimore allotment is to be kept up.

While there have been promises of increased shipments towards the end of November and early in December, it can be stated that the trade is far from optimistic along that line. The call from consumers who have no coal or whose small supplies are dwindling is becoming more active every day. There are a large number of consumers refusing to take soft coal, hoping against hope that they will get hard coal supplies, but real cold weather will probably drive them to cover.

NEW YORK

Conditions are more settled. Although the Metropolitan district could absorb more of the domestic coals there is no real shortage and everybody seems able to obtain a portion of their needs.

The closing of the Lake season will naturally help the local situation. Dealers have many orders yet unfilled and some are particular about making deliveries outside of their immediate territory, even to old customers.

In Greater New York, especially the outlying districts, consumers have resorted to the use of substitutes, coke being a close second to bituminous. Briquets are also largely used. Some dealers are quoting a price of $18 per ton for coke.

There is little demand for the high-priced independent coals in this market, the larger independent operators quoting around $10.50 for egg, stove and chestnut, while the smaller ones are said to be quoting as high as $13.

Pea is as strong in demand with some producers as either egg, stove or chestnut, and dealers are taking all they can get. Buckwheat is gaining strength and some companies say they have no trouble to move it. Rice and barley are trouble makers. There was a rumor that some of the companies are considering the advisability of cutting their prices for the steam coals, in order to compete with bituminous.

PHILADELPHIA

The expected shipments from the companies have not yet materialized, and the waiting is a severe strain both on the retailers and the consumers. From information that is given out it would appear that no real relief can be expected until Dec. 1 at the earliest.

Recently a shipper from the upper field flooded this market with cards to the effect that he had coal for sale. In reply to inquiries quotations were made as follows: Egg and stove, $12.65; nut, $10.75 and pea $8. One interested dealer went to the region and examined the nut coal and said that possibly 5 per cent of it might be coal. Another offering at $9 has been simply bank coal, with everything in it from stove to dirt. The number of dealers who are taking bituminous is increasing, but very slowly.

The steam sizes are little changed, with free offerings of all sizes at off prices, although the better buckwheats of the independents are still able to command full price. There is, however, considerable tonnage offering from that price down to $3.25. In rice coal the cut is even deeper and prices of $1.75@$2 are frequent, with barley freely offered at $1.25.

BUFFALO

The supply is so small that there are all sorts of complaint. Even the fuel administration is reminding the authorities in New York that the allotment is not kept up, but there is no promise of more. All that is expected now is that the supply to the Lakes will be continued a week or two after the season closes.

The city is not buying much high-priced independent anthracite and some other sections have cut it off by fixing a maximum price. A prediction that coke for domestic purposes would not last past the middle of this month has not come true, for there appears to be as much as ever.

Lake loading suddenly increased to 151,450 net tons last week, of which 43,600 tons cleared for Milwaukee, 23,700 for Chicago, 9,500 for Racine, 7,000 for Waukegan, 1,000 for Kenosha and 550 for Green Bay, on Lake Michigan, 37,200 for Duluth and Superior, 14,200 for Fort William, 8,500 for Port Arthur and 6,200 for Ashland, on Lake Superior.

Rates are strong at $1.25 to Racine and Kenosha, 60c. to Chicago, 50c. to Milwaukee, Green Bay, Waukegan and Port Arthur and 40c. to Duluth, Fort William and Ashland.

BOSTON

Mild weather continues the most favorable factor and it is felt that in the absence of bitter cold in the next three weeks and no unusual breaks in production we shall somehow pull through. New England is hoping to benefit materially when the last Lake shipments have been made, for certainly the heavy volume in that direction has curtailed the tonnage available for distribution here.

The retail trade shows no new developments. Stocks are of the hand-to-mouth character and deliveries are still restricted to one and two-ton lots. The Emergency Fuel Administrator of Massachusetts has raised a controversy over a recent price advance of one of the retail distributors here, claiming it to be unauthorized. Practically all the other retail dealers had already been obliged by mounting costs to increase prices. Similar, and in some cases, higher advances had been authorized in nearby cities and towns by the same functionary.

South

VIRGINIA

With transportation conditions somewhat improved it was possible to speed up production to a slight extent, the aggregate output being in excess of 62 per cent. The improvement in transportation facilities was more marked on the N. & W., on the Interstate and on the Southern than on any other roads. The output is still somewhat short of market requirements notwithstanding a sluggish Tidewater demand.

BIRMINGHAM

Car shortage continues the principal disturbing factor, the railroads not being able to furnish on the whole over 50 per cent of the cars ordered. Contract mines are far behind on deliveries and furnace interests and coke manufacturers are not getting the desired amount of coal.

Inquiry for steam coal is light and spot business is taken care of without great difficulty. Consumers in general are holding off from the market as much as possible, buying only in quantities needed for current use.

The continued warm weather has somewhat softened the demand for domestic coal. However, the softness is only noticed in the lower grades. Indications point to the enforced use of mine run in considerable quantity, as the production of lump and other domestic sizes, in the absence of the usual stocks at this season, will not be sufficient to supply the winter's demand.

Prices are practically unchanged from a week ago. Production for the week of Nov. 4 was slightly better than the previous week, totaling 340,000 net tons, which was due to a temporary betterment in car supply.

Chicago and Midwest

Sluggishness Prevails in Most Midwestern Markets

Slight Steam Pick-up in Chicago Helps Flooded Market but Elsewhere There Is Nothing Encouraging—Domestic Prices Soften a Little.

Sluggish conditions rule most of the markets just now, thanks to the continued warmth. Kentucky producers are pushing hard to find markets for even their lump, and steam trade is not brisk there. Around St. Louis there are no bright spots. Almost every Illinois coal reaching that market is dragging in spite of the new effort of Distributor Spens and the United States Chamber of Commerce to encourage slow but steady stocking. In the Chicago market there is a trifling steam pick-up which has had practically no effect on a market already marked by a wide spread in quotations.

Railroads continue to buy slowly but steadily so that almost every line in this region has at least a normal volume on hand. They are getting a good deal of fuel at reasonable prices and are not so thoroughly convinced of a coming drop in price. Apparently the railroads have some knowledge of the possible car supply of the rest of the winter which other large consumers have not. There is no denying that many industrial buyers remain confident that they will be able to get plenty of coal even if real winter settles down for a long stay.

Shippers are sending a good deal of coal to distant markets where snappy sales effort has located a fair reception. This is helping materially to overcome the depression which slow local conditions spread.

LOUISVILLE

Due to comparatively light production in eastern Kentucky because of the usual poor car supply, and with much of the production under contract to Lake shippers, steel mills, railroads, etc., the amount of open market coal has been comparatively small. As a result, prices have been well maintained in spite of reductions in the competitive fields of West Virginia.

Eastern Kentucky mine run and screenings are selling at $3.75@$4 for non-gas, and the gas or byproduct coals are $4@$4.25. Some 2-in. is reported at $6@$6.50, but block is selling at $6.50@$7, and quoted as high as $7.25. The margin between prepared and mine run in wide, and has created a better demand for mine run, but with the Lake movement perhaps closing this week, some of the operators will be forced to screen more coal, and it is not believed that the margin can be maintained.

Retailers are buying as they need it, and not stocking. They anticipate a lower market on eastern Kentucky prepared by the latter part of November or early December, as car supply is showing improvement, and with Lake shipments cleaned up, the operators will be forced to hustle for business.

SOUTHERN ILLINOIS

A declining market on steam, no demand for domestic, with continued mild weather—that tells the story in this field. For the first time since the mines resumed in the Carterville field there are no-billed domestic sizes on track and here and there a few mines have found it necessary to make "repairs" and remain idle.

The association operators, however, are maintaining the price of $5.50 on lump, egg and nut. A few of the independents have cut to as low as $4.50, but it is not general. Screenings went down to $2, and then came back again about 25c. Car supply is not good. Railroad tonnage is good, everything considered. The bulk of the domestic tonnage is moving to the Northwest Southern shipments are very poor.

Conditions are similar to this in the Duquoin and Jackson County field, except that on the Illinois Central working time is 2 days a week as a maximum. Mt. Olive is unusually burdened with steam sizes. Domestic is slow but a price of $4 for St. Louis shipments and $5 for country is being maintained. Steam nut is as low as $2.50, and screenings, $2.

In the Standard field conditions are extremely bad. Nearly all mines have no-bills and some of them are unable to work on this account. Lump coal is down to as low as $2.75 for 2-in. lump and $3.50 for 6-in., while screenings are showing a little strength at $1.25@$1.50.

ST. LOUIS

Warm weather and a jammed market has practically put the coal man out of business here, temporarily. All yards are loaded and the roads west of here are jammed up with consignment coal destined to Omaha, St. Joseph and Kansas City. The public is not buying. It is anticipating lower prices, or an unusually mild winter that may force lower prices.

Reports come in from the country districts that domestic and steam coal, which has been declining for several weeks, is dead because buyers are on the market for small quantities from day to day and are not stocking ahead.

Steam conditions locally are the same. With the exception of public utility plants there is very little storage. Gas plants in the Middle West have been unable to get any storage coal ahead, but are promised supplies during the latter part of the month.

Hard coal shipments have been curtailed and the public is resenting the prices. Very little local coke is offered but some is moving in from Alabama, and a little smokeless is coming from the East. The retail price has not been disturbed, but this may come soon if weather conditions do not change.

CHICAGO

An almost imperceptible steam pick-up is on now as was prophesied last week. It is not strong enough to have a general upward influence on the whole market as yet but it is viewed with pleasure by the selling organizations. Their very anxiety to meet this demand is retarding rising prices on small sizes and it is doubtful whether any increase at all has taken place.

The range is wide on steam coals so that a slow strengthening of prices is hard to detect. Jobbers have been unwilling all week to pay more than $2.25 for southern Illinois screenings, for the bulk of the business in that coal has been running $2.30@$2.50. Other Illinois screenings are selling down to $1.50.

While the call for domestic continues brisk there is more coal on the market that can be absorbed at top prices, and although choicest 6-in. southern Illinois lump continues to bring $5.50 to companies whose trade and service are well established, some shading has been made occasionally. Central Illinois with more production than it has known what to do with for weeks, has softened on 6-in. lump so that practically none goes above $4.75 and a good deal as low as $4. Slight softenings on Indiana domestic sizes a week or two ago have not been regained. Kentucky coals find an indifferent market here just now The trade still yearns for a long cold snap.

WESTERN KENTUCKY

Lack of industrial demand and only a fair call for prepared sizes have resulted in the market working lower. Operators are now having trouble selling coal. Some are offering lump at $4 a ton rather freely, while others are holding at $4.25@$4.75, but not refusing much business at $4.25@$4.50. Mine run has worked off to $2.25@$2.50, and the low price here is probably being shaded somewhat. Screenings are quoted $1.25@$1.50 for pea and slack and $1.50@$1.75 for nut and slack.

Retailers have been buying a little more freely, but with warm weather they report slow sales and are refusing to stock, as they figure that even $4 a ton is out of line for lump coal and they do not care to have any heavy stocks on hand if the market shows further decline. The western Kentucky market as a whole is weak.

INDIANAPOLIS

Prices on Indiana coal seem a little weaker, due to the unusually warm weather. Some prepared grades are selling around $5, while screenings are slightly above $2.

Operators are at a loss to know just what the industrial users are doing for coal. There is little being purchased, yet each day come reports of industrial expansion that calls for more power. The domestic situation shows no change. Such buying as is done is in small lots. Prices on foreign coal show little change, but there are some grades of Indiana coal that are being offered by retailers at prices about 50c. lower than a week ago.

Eastern Inland

Spot Market Feels Lull As Lake Season Closes

Some Mines Having Ceased Shipments to Lower Ports, Buyers Expect Lower Prices—Operators Take Different View—No Marked Weakness in Steam Trade—Domestic Grades Moving Better.

The end of the Lake season is given as the reason for the lull in spot market activity. Some mines are already discontinuing shipments to the lower ports and within another week buyers profess to believe that this diverted tonnage will be available at lower prices. Operators, however, feel that this surplus will easily be absorbed with slight and only temporary price concessions.

Although the steam trade is dull, there is no marked weakness and the tonnage offering is easily sold. Domestic grades are moving better, not only because of cooler weather but also due to the stimulating effect on Ohio production of the recent 50c. raise permitted by the Ohio Fuel Administrator.

CLEVELAND

Continued moderate weather and easing up of Lake shipments have combined to soften the industrial market. There is no marked weakness, but the price for No. 8—in. lump is about 25c. less than it was two weeks ago. Mine run and screenings are holding their recent levels.

The supply of coal, however, has not increased greatly. This is largely due to the low car supply, which is reported as getting worse. Coal operators in the Ohio district have started an investigation into car supplies at Ohio mines. It is claimed in some quarters that this state is being discriminated against in favor of other states.

The Lake season is near its close and this will release many cars for other uses. The warm weather has had a dampening effect upon the coal market and for the next month or so the state of the market will wholly depend upon weather conditions.

Purchases of fuel for household purposes are slightly less. With Pocahontas and hard coal unavailable in adequate volume consumers have not yet had the urge of cold weather to place orders for less desirable grades.

DETROIT

Only a moderate degree of interest is aroused by offerings. Receipts fall short of the requirements of local consumers. This circumstance, however, seems to have little influence in stimulating a more active demand.

The close of Lake navigation, the jobbers believe, will not materially change the situation, except that for a few days cars may be more plentiful on the all-rail routes.

Coal now reaching Detroit is chiefly from Ohio mines. Hocking lump is $5.75, egg, $5.50, mine run, $3.75, nut, pea and slack, $3.25. Three-quarter Pittsburgh No. 8 is $4.75, mine run, $3.75@$4, slack, $3.50@$3.65. Fairmont lump is $4.75, mine run, $3.50@$3.75, slack, $3.50. Four-inch block from West Virginia or Kentucky holds around $6.50, mine run, $4@$4.50, slack, $4. Very little smokeless is available.

COLUMBUS

A decline in prices has taken place as the result of the near approach of the Lake closing. Mild weather has helped to cause the reaction although it would take quite a long cold spell to inject much strength in the trade. Retailers have larger stocks than formerly. There are hopes in the minds of consumers that prices will be lower and consequently they are only buying part of their winter fuel requirements.

Steam trade is rather quiet as most of the large users have accumulated considerable reserves. Buying for immediate needs is now the rule.

In the Hocking Valley, Crooksville and Pomeroy fields the car supply has been about 33 to 40 per cent. In eastern Ohio the output is close to 50 per cent because of a better car supply.

Orders have been given for no more Lake shipments from the Southern roads. Shipments from the Hocking Valley, T. & O. C. and Ohio lines will continue for some time, depending on weather conditions.

EASTERN OHIO

Due to lack of cars and restricted operations on Armistic Day, the output during the week ended Nov. 11 dropped below that of any week since mining was resumed in August. Production aggregated 272,000 tons or 44 per cent of capacity, registering a decrease of 24,000 tons under the preceding week.

Regardless of restricted output, steam demand has been tapering off and because reserve stocks are known to be too low for this time of the year some operators are apprehensive for the steam trade in view of approaching weather conditions which may seriously affect the already crippled condition of the railroads. However, it would seem that many steam users have deferred their storage programs until after the close of Lake navigation anticipating not only increases of considerable magnitude in available supplies of coal but a downward movement in prices.

Greatly increased activity has developed in the retail trade because of the cooler weather now prevailing. It is expected that the 50c. additional granted by the Ohio Fuel Administrator, effective Nov. 15, on prepared sizes above 1¼-in. produced in Ohio will stimulate production.

Spot prices in the main adhere to those set by the State Administration. Retailers say that smokeless lump from eastern Kentucky and West Virginia is becoming more plentiful but the price range is $6@$8.

Cleveland received during the week ended Nov. 11 the largest volume of bituminous coal on record. The total arrivals were 2,430 cars, divided: 1,775 to industries and 655 cars to retail yards. Average weekly receipts during the last quarter of this year now average a little less than 2,000 cars per week.

PITTSBURGH

While there are wide variations in car supplies from day to day, the average remains fairly steady at something like 40 per cent of mine ratings. Distribution is much the same as formerly, to the Lake trade, industrial consumers and domestic consumers. In general the coal is moving on contract, usually with a weekly or monthly adjustment of price, no large tonnages of spot or prompt coal being sold as a rule.

The iron and steel industry continues to show very heavy production. Since Oct. 1 steel production has been at a rate about 15 per cent greater than the average rate April 1 to Oct. 1, and it is seriously questioned whether steel consumption can support such a rate of production throughout the winter.

Current market quotations are as a week ago. The undertone of the market is plainly softer and next transactions of any consequence are expected to be at say 25c. lower, for spot and prompt. For shipment over the month of December, however, prices are expected to be firm as weather conditions are likely to make fresh transportation trouble.

BUFFALO

Demand continues what the shippers call light, yet it may be as heavy as the consumption, and if it is, the trade will have to stand it. As a rule the complaint of car shortage is as great as ever, but there is less looking for a collapse in consequence of lack of transportation.

Much complaint is heard from operators on account of the great surplus of miners in all regions. This makes it necessary to suspend work a good part of the time and if cars were not so scarce the market would be broken down. The high wages enables the men to get along without working more than half the time. It is a state of affairs that nobody seems able to change for the better. So long as it lasts the labor situation in the mines will be bad.

Shippers are putting out their coal more on its merits than they used to. They can find customers who will pay an extra price for extra quality. This is a good thing to do, for it increases efficiency and confidence in the trade. All the way up to a dollar a ton extra can be had in that way.

Prices are fairly firm at $5@$5.25 for gas lump, $4.75@$5 for steam lump, $3.25@$3.50 for mine run and $3@$3.25 for slack, Allegheny Valley prices being somewhat lower than these figures, on account of quality and lower freight rates.

NORTHERN PANHANDLE

Operations were more curtailed than during the preceding week owing to difficulty in securing cars. The West afforded the best market owing to the fact that higher prices were being paid. Mine run commanded $3.25@$4, with prepared bringing $4.50@$5. Slack ranged $2.75@$3.50.

Northwest

Hard Coal Short but No Bituminous Famine Ahead

Allotment of 60 Per Cent of Normal on Anthracite Not Expected Now—Substitutes Grow Commoner — Rail Trade Cuts Docks' Soft Coal Business.

Nobody expects the full 60 per cent allotment of anthracite to reach these states now. The shipments have been too light and rail coal from Pennsylvania probably will not come through as was expected. Even the extension of the navigation season to Dec. 15 is hardly enough to let sufficient hard coal in. Many substitutes are getting a trial. The anthracite price has ascended about $1 in most Northwest markets.

The territory is well supplied with bituminous, however. Rail shippers have been making hay while the sun shone through the early fall months. The result is rail competition is now cutting more heavily into the docks than it ever did before. An organization to promote this trade is working briskly at Minneapolis and St. Paul, announcing that it has designs on a good deal more business than it has landed yet.

MILWAUKEE

The market is featureless at present, and may continue quiet until winter weather stirs up consumers. Dealers are only reasonably busy, and the entire market lacks pep. Prices continue undisturbed. If an advance comes, it will not be until navigation closes, and future supplies depend upon rail service. There can seemingly be no pretext for advancing soft coal, but the anthracite situation is unquestionably bad.

Nine cargoes of hard coal were unloaded during the first half of November, the aggregate being 76,839 tons. This makes the cargo receipts of hard coal since the opening of navigation, 218,953 tons. Soft-coal arrivals during the same period aggregated 2,131,211 tons. Last year the receipts to date totaled 923,881 tons of anthracite and 2,502,099 tons of soft coal.

DULUTH

If any one feature of the market stands out at present, it is the anxiety over the hard-coal situation. At present it does not seem that more than 600,000 tons can possibly be delivered before the close of navigation. This is about 40 per cent of the normal supply. The lower part of the state may get relief by all-rail from mines. Pocahontas briquets are coming into favor as a hard-coal substitute.

No anxiety is felt about soft coal. There has been a falling off in demand from mining companies on the Iron Ranges. One company has relinquished an option on 10,000 tons of steam coal. This lack of demand is thought to be because of the results of the recent elections here. Minnesota is leaning toward the farmer-labor party candidates—in fact has sent a man of that party to the United States Senate—and these are known to be in favor of additional taxes on iron mining.

Last week saw receipts of but forty-one cargoes, of which six were anthracite, as against forty-nine the week before. Only twenty-one cargoes are reported as having loaded out of lower ports for here. The market on hard coal is, of course, strong, though there will be no general advance. The differential of $1.05 a ton, mentioned two weeks ago has again appeared. This is coal from non-union mines. Railroads are out of the market, evidently waiting for lower prices.

MINNEAPOLIS

The fuel directors have announced that the danger of a serious shortage in the Northwest is now remote except in hard coal. On soft coal, it has been entirely a matter of transportation for a number of weeks. The supply will hardly be enough for the entire winter on the basis of the stocks so far sent to the Northwest. But between the stores on the docks and the tonnage received all-rail, plus the tonnage which may reasonably be expected to come during the remainder of the winter, all rail, the Northwest will doubtless get through without difficulty.

Anthracite has come very slowly so far. The tonnage has hardly amounted to 20 per cent, well into November. As the district was allotted 60 per cent of a normal supply, arrangements have been made to extend the period of Lake navigation beyond the usual closing date to Dec. 15, in the hope of making up the deficiency.

The rail trade has about flooded the Twin Cities with soft coal and has put up a competition which has forced down dock prices constantly. Rail coal and dock coal divide the business in the Twin Cities and even north of these cities, while south of there rail coal is taking a bigger portion of the business than ever.

All this means a great deal to the dock business, which has hard work to make a showing with the costs running high for maintenance of docks, freights by rail and water, handling charges and the like.

New England

Smokeless Supply Runs Low, But Demand Is Almost Nil

Car Supply Erratic—Small Users and Retailers Tag Along, Relying on Dull Market to Supply Short-Notice Needs —Broad Market Still Far Off.

The situation of smokeless grades has changed materially at the mines and at Hampton Roads. Instead of accumulations at the terminals there is now in most cases an actual shortage, and more than a few bottoms have been obliged to wait from three days to a week for cargo. Car supply is erratic, due partly to heavy shipments West earlier in the month and to failure to return cars on the part of Western roads.

There is almost an entire absence of demand here. At the same time there are smaller users together with retail dealers who are running along on light stocks, relying upon a rather lifeless market to furnish what coal they may need on short notice. If Pocahontas and New River advance in delivered cost there is still the central Pennsylvania area to draw from, and it may be that such buyers will not overstay. The corporations are all loaded up with British coal, supplemented by current deliveries on contract via Hampton Roads, and for that reason it is difficult to figure out any broad market for a long time to come.

While Southern coals have been advanced moderately on cars Boston and Providence for Inland delivery, $8.50 @$8.75 being the current level, most of the Pennsylvania grades offering here have remained stationary as to price. A few of the more desirable coals were advanced a fortnight ago, but the producers have now found that cars are catching up with orders in hand and they are again combing over the market for consignments.

Coastwise freights from Hampton Roads are still on a minimum basis, and prices on Pocahontas and New River have not yet advanced sufficiently to furnish an opening for Pennsylvania coals by water, except at shoal water points. A few small users have begun buying Cambria coals by this route on the assumption that prices are about on the bottom.

Receipts both by water and all-rail show a falling off, but this was only to be expected. Everything considered the volume has been reasonably strong since early July, and in view of relatively light consumption by the railroads and by New England industries it was almost certain there would be a diminished movement in November.

The long-fought textile strike which had been effective from Feb. 13 was brought to an end the past week. The operatives have accepted the original terms offered by the mill-owners, and now most of the cotton mills are in as full operation as trade conditions will permit.

Cincinnati Gateway

Cold Weather Hoped For To Offset Lake Closing

Price Drop Expected Unless Temperature Falls or Transportation Fails—Prices Propped Up by Eleventh-Hour Lake Rush — Domestic Demand Exceeds Supply.

Weather conditions are being anxiously scanned these days, it being felt that colder weather or crippling of transportation is the only element that can stave off a drop in prices with the close of the Lakes. The C. & O. officially brought the season to a close on Nov. 18 and the N. & W. ordered all shipments over the Portsmouth scales cleared by Nov. 22. There was an eleventh-hour rush to fill out certain cargoes which helped to bolster prices for a few days, but softness again set in and a drop of 50c. followed.

Domestic prices are holding their own with the demand still overtopping the supply. The slack prices will get the severe cut in readjustments, it is believed, indications already pointing in that direction. The movement of empty cars is draggy. Transportation is now the key of the situation.

CINCINNATI

Though more and more mines are turning toward the make of prepared coal there is a sufficient amount of takers to hold this part of the market firm. Lump shipments from Hazard, Harlan and Logan begin to show heavier and to this shortly will go a large amount of coal that has been moving to Pool 4.

Steam requirements are not being forced on the market and the buyers of byproduct are lying back, evidently waiting to see the next developments.

The smokeless business goes along on an even keel and the representatives here do not look for much change in the shift of the seasons. Top prices are still possible on the steam sizes and some byproduct plants are still paying a premium on the screenings.

There has been no change to the local situation. Generally speaking, the retail prices are 50c.@$1.50 below the limit set by the Ohio fuel authorities.

HIGH-VOLATILE FIELDS

KANAWHA

The output of the region is not more than half the weekly average of last year. Although the demand has been on a decline, nevertheless, market conditions have not affected operations, owing to the fact that the output is not sufficient to fill contract orders. There is hardly as heavy a Western demand for steam grades, but prices are so low in the East that very little coal is moving in that direction. The spot price on mine run for Western delivery ranges $3.75@$4 as against $2.75@$3 in Eastern markets.

LOGAN AND THACKER

Logan mines, with somewhat better transportation facilities, have been able to speed up production to some extent. Much of the additional output has been absorbed by the Lake trade. Producers are behind with orders for regular customers and are still working to a great extent on contracts. Little of the tonnage is finding its way to Eastern markets, a much better price prevailing in the West.

There has been little fluctuation in the output of the Williamson field in recent weeks. It still remains at about 40 per cent of potential capacity. Owing to this limited production, it is not possible to more than fill contract orders. The bulk of the output is moving westward.

NORTHEASTERN KENTUCKY

Notwithstanding a small increase in the output the market is keeping pace with the larger production. The current demand is more than sufficient to absorb any surplus spot coal and a few large contracts are being placed at prices somewhat better than the current market prices. It is possible as a rule to secure about $4 for mine run, with prepared grades ranging $6@$7.

LOW-VOLATILE FIELDS

NEW RIVER AND THE GULF

Better facilities for Western movement are tending to reduce the amount of New River tonnage available at Tidewater but without enhancing the price. Producers are greatly handicapped by a poor car supply, few mines being able to secure more than 26 per cent of allotment and hence not loading more than 115,000 tons per week. Contract orders are absorbing nearly the entire output, so that after all there is little spot coal to be had. The scarcity in the West is reflected in a price of $5.50@$6.50, but at Tidewater the range is $4@$4.25.

Coal is somewhat more plentiful at Sewell's Point than at other Tidewater piers. Gulf mines are handicapped to a great extent by limited transportation facilities and principally by lack of adequate motive power. Although these facilities are inadequate they are being slowly improved by the Virginian.

POCAHONTAS AND TUG RIVER

Any advantage to the Pocahontas field as a result of the lifting of Western embargoes has been more than offset by a curtailment of transportation facilities in other directions. It is not possible to send much more coal to the West than it was while embargoes were in effect. The shortage of empties is also reducing the movement to Tidewater. The trouble seems to be in getting cars back on the home line. It is out of the question to handle many spot orders and that is contributing to a scarcity of Pocahontas coal in the West, as a result of which prices are strong.

Shipments from the Tug River region are being made to a great extent to Western points. The output is so limited, however, that mine owners have all they can do to keep up with contract orders so that after all little spot coal is being marketed. The average price on mine run from this region is $5.50@$6.50.

Coke

CONNELLSVILLE

The coke market has declined again, losing 25c. on furnace and 50c. on foundry, spot and prompt being now quotable at $6.75@$7.25 and $7.50@$8.50 respectively.

The market seems full of coke now, as production has continued to increase and consumption does not increase materially. The market has poor absorbing power since nearly all the furnaces dependent on Connellsville merchant coke have contracted to the end of the year and thus there is little occasion for furnaces to buy at this time.

It develops that when the market broke, about a month ago, most of the furnaces concluded they would be taking a narrower chance by buying than by not buying. Accordingly, there was much contracting to the end of the year at $8@$8.50. These transactions the furnaces now regret, as the further declines in the coke market do not help them while they have an adverse sentimental effect on pig-iron prices, which are sagging almost constantly.

The *Courier* reports production during the week ended Nov. 11 at 115,600 tons by the furnace ovens, and 61,280 tons by the merchant ovens, a total of 176,880 tons, an increase of 12,560 tons.

UNIONTOWN

The three coke plants of the Oliver & Snyder Steel Co., closed since the strike last April, resumed operations last week, prior notice having been served upon employees to return to work or vacate company houses. These plants are the last of the larger independent plants to recover from the coal strike. While technically the men are still "out" in the Connellsville region, operators are producing all the tonnage needed.

Railroads and the Lakes are taking practically all the coal tonnage from the Connellsville region. The Eastern market is described as "quiet." There continues to be no revision in coal prices here, steam coal being quoted at $3 and byproduct, $3@$3.50.

The coke market has not strengthened to any extent and the price resistance is met by operators with a claim of increased cost of production because of the strike. Furnace coke is quoted $7 @$7.50 with foundry $8.50@$9.

BUFFALO

Furnace demand is still light, but domestic movement is so large that certain producers have put up their prices $2 or so. Jobbers quote foundry at $8.50@$9, furnace at $7.50@$8, and offgrades and stock at $6@$6.50, adding $3.28 for freight. Local byproduct furnaces demand $12@$14 for domestic sizes with various minor freight charges.

News Items From Field and Trade

ALABAMA

It is reported that **Watt Brown**, of Ragland, will undertake the development of coal properties in that county, where he is interested in a large acreage of land. It is also understood that **Joseph G. Rowell**, who is operating mines at Inland, in St. Clair County, will electrify his plant and install a coal washer.

The Beechy Hollow Coal Co. has been organized at Dora by Olin Goodwin, C. I. Jones, of Dora, and T. E. Dunham, Birmingham, and has taken over the old operations of the **Burnwell Coal Mining Co.** at Burnwell, near Dora. The new properties recently developed by the Burnwell company in Walker County were not included in the transaction.

James Bonnyman, who has been a prominent coal operator in the Birmingham district for a number of years, being one of the officials and owners of the **Brookside-Pratt Mining Co.** and previously connected with other mining developments, will move to Cincinnati, where he will reside in the future.

At a meeting of the board of directors of the **Alabama Mining Institute** recently held, **Frank Nelson, Jr.**, was elected president for the ensuing year, succeeding **Frank Crockard**, of the Woodward Iron Company. All the other old officials will hold over until their successors are elected later on.

At the election of Nov. 7 an amendment to the state constitution authorizing the state to lend its **credit to the exent of $10,000,000 to the harbor commission** for improvement and enlargement of harbor and port facilities at Mobile, was approved by a large majority. Considerable Alabama coal passes through this port yearly.

COLORADO

With the opening of the **Nushaft mine** of the **Colorado Coal & Mining Co.** at Coal Creek, all of the mines of this company in the Fremont County field are in operation. This mine had been idle for several months.

Settlement of the bituminous coal **strike in the San Juan valley** has at last been made. The operators have agreed to pay the 1921 union scale to miners, which calls for $1.14 per ton on veins in the neighborhood of 6 ft. The working of the smaller sized veins, which calls for a higher rate of pay, has been stopped.

CONNECTICUT

The Molstein Coal Co., of New Haven, has recently filed papers of incorporation to engage in the coal and fuel business, conducting yards at New Haven. The firm will have a capital stock of $100,000, and will commence business with $75,000.

The City Coal Co., Hartford, has applied to the War Department, at Providence, for permission to construct a new front on the dock and wharf in the Connecticut River. This would give the company much more facilities to handle incoming coal.

Anthracite to the amount of **172,870 gross tons entered Connecticut during October. This was 9,870 more gross tons** than was to be allotted to the state, the allotment being 163,000 tons, or 60 per cent of the normal monthly supply. All-rail shipments amounted to 123,533 tons and Tidewater shipments to 49,340 tons, the latter exclusive of Tidewater coal mined by the Philadelphia & Reading Co., which is sending most of its coal west, New England receiving meager shipments.

ILLINOIS

Harry M. Goodnow, for several years chief engineer of the Equitable Coal & Coke Co., with mines at Johnston City and Du Quoin, has been made superintendent of one of the mines at Johnston City. **Arthur M. Lee**, formerly assistant to the chief engineer has been appointed to fill the vacancy made by Mr. Goodnow's promotion.

The Bradenbery Coal Co. of Davenport, Iowa, has purchased one of the larger drifts at Breeds, Ill., and is enlarging and improving it and expect soon to be mining coal in large quantities.

Work is now well under way on the sinking of the large mine two miles east of Percy, by the **Willis Coal & Mining Co.** The Jones-Avis Sinking Co., of West Frankfort, is doing the work. The shaft is to be 18 by 11 ft. in the clear and will be 130 ft. deep. The mine will be equipped with steam hoists and electrical haulage and hauling machinery underground. It will be served by the Wabash, Chester & Western R.R., which is already working on a branch from its main line to the mine site. The mine, under lease by the **Southern Gem Coal Corporation,** is expected to be in operation in from eighteen to twenty months, and may produce 6,000 tons a day.

Indictments have been returned by the federal grand jury, charging **an intricate system of fraud in coal shipments,** by which railroads were mulcted of as much as $300 a day for months. The indictments were against **James C. Michaels**, president of the Chest Creek Coal Co., and **Daniel J. Kinrally**, an agent of the company. State indictments against the two men were returned last April. Federal investigators report that the fraud was worked by reporting carloads of coal received in bad condition, then, before the road checked up the report, $400 or $500 worth of coal would be removed and reported lost.

The Hoy Coal Co., Springfield, has just been incorporated. The incorporators are George W. Schwaner, Carl Hoy and W. R. Whitney.

Edward Gartner, of Pittsburgh, and **George B. Worden**, of Edwardsville, are preparing to sink a coal mine north of Edwardsville. Several prospect holes have been located and drilling has been done by the Pittsburgh Drilling Co. Options have been taken on about 10,500 acres of land from more than 90 farmers. Pittsburgh capital is said to be interested in the new mine.

The Standard Turbine Corporation, of Wellsville, N. Y., has appointed **E. E. Maher**, district sales manager in Chicago, with offices in the Insurance Exchange Bldg. The Chicago office will handle business for the greater part of Indiana, Illinois and Iowa.

IOWA

The Norwood-White Coal Co. of Des Moines has recently opened a large coal mine near Herrold. The company has inspected a wide coal field and it is probable that several other mines in that vicinity will be opened. The mine is to be equipped with electrical machinery.

KANSAS

Theodore Langenbergh, engineer for the Phoenix Utilities Co., has opened headquarters in Oswego, and has started on a survey of the company's options on coal lands near that city, preparatory to drilling. The primary object of the company is to exploit the field for the use of its big power plant, which is under construction.

KENTUCKY

A report from Whitesburg is to the effect that the **Isaac Lewis Coal Co.** has sold several mines to the **White-Elkhorn Coal Co.**, of Detroit, which plans for enlargement of capacity.

Approximately $80,000 was the amount of the verdict awarded **M. M. Tyree** of Charleston, Va., against the **Kentenia Coal Corporation,** of Pineville, in a suit in the United States District Court at Covington. The judge instructed the jury to find for the plaintiff. The defendant company sought to secure a continuance but the motion was overruled. Suit instituted by Tyree was to recover the sum of $72,836.08, with interest, the plaintiff claiming that such an amount was due him as commissions and as profits as a stockholder during the time he was purchasing agent and sales agent for two years. Tyree testified that as a stockholder he attended a stockholders meeting and upon examining the books found an entry showing that the company owed him $72,836.08.

The last of the Kentucky national guardsmen on duty in Hopkins County were recalled Nov. 10. The principal source of trouble was the effort of the United Mine Workers to organize workers in the strip mines, who belong to the Shovelmen's Union. The operators oppose the U. M. W. efforts and discharge men as fast as they join the miners' organization. Disorder has been threatened several times, but the situation now is such that local officers can handle it.

The W. G. Duncan Coal Co. at Greenville, will install a 3,000 kw. steam turbine with condensers and auxiliary equipment.

Federal Judge A. M. J. Cochran, Covington, on Nov. 3, ordered the sale of the property of the **Liberty Coal Co.**, in Floyd County, to satisfy a judgment of $108,000, secured by T. H. Morris, of Floyd County. John W. Menzies, federal court clerk, Covington, was named as receiver and special commissioner to conduct the sale. The value of the property is approximately $125,000.

Steady improvement is expected in the movement of coal cars into the Elkhorn-Hazard coal field and that within a short time normal conditions will have been reached in mine operations. It is said that the L. & N. is now receiving 25 and 30 new cars daily from the Cambria Steel Co., and that at the present rate ample cars will be given the two important fields. The road is also steadily picking up its idle cars on other roads and diverting them to these fields. Most mines of eastern Kentucky loaded more coal during the first half of November than they have loaded in a month before.

MICHIGAN

Following a talk on other matters at the twenty-fifth annual meeting of the Bankers' Club of Detroit, **Thomas R. Marshall**, of Indianapolis, former vice-president of the United States, outlined **the attitude of the Federal Fact Finding Coal Commission** of which he is a member. "It has neither thought nor purpose of being awed by influence or bought by gain," said Mr. Marshall. "It does not purpose to be suspicious nor censorious, but it does intend to see that it shall not be treated as though it were a court of law before which parties litigant are appearing, each striving to conceal some fact of advantage to the other side, and each seeking to cast discredit upon the other. It has been promised, and so far, believes, that it will receive the honest assistance of both operator and miner in the effort to ascertain the truth."

MINNESOTA

C. P. White, federal administrator for the Northwest, was at Duluth-Superior harbor recently on a dock inspection. Mr. White felt optimistic on the bituminous situation, but stated that anthracite needs could not possibly be filled by water.

A Minneapolis coal company is advertising lignite coal as a profitable product, and invites investment in its 6 per cent corporation notes, running 18 months. The advertisement suggests that a $250 investment will finance a car of lignite which will find an immediate market, and will thereby repeat and handle another car and so on during the winter. Any amount is invited from $10 up.

MISSOURI

A large coal field has been discovered at Mosby in Clay County. **The J. E. Drysdale Coal Co.**, of Davenport, Iowa, which made the first tests for the coal, has control of 3,000 acres. **The Mosby Coal Co.**, which was formed to exploit the new field recently sunk a shaft and coal is now being hoisted there.

The Higginsville Coal Mining Co., has changed this name from the **Bonanza Coal Co.** and has incorporated with a capital stock of $15,000 by Nelson B. Good of Kansas City and H. C. Odee of Potter, Kan.

Fire of undetermined origin recently destroyed the office, garage and stable building of the **De Long Coal Co.**, at Kansas City, causing a loss of $15,000.

NEW YORK

Thomas Dickson, of Dickson & Eddy, New York, has been elected a director of the Brooklyn Trust Co. He succeeds the late Edgar M. Cullen, former Chief Judge of the Court of Appeals of New York State.

The City Club of New York and the **Women's City Club** are to hold a joint public meeting on coal at the Town Hall on Nov. 27. **Arthur S. Learoyd**, of Thorne, Neale & Co., will speak on The Immediate Crisis. The United Mine Workers of America will be represented by **Thomas Kennedy.** Senator William E. Borah of Idaho will give his views on coal as a national problem.

An audience of more than 250 men, including port engineers of leading steamship

lines, naval architects and representatives of shipbuilding companies, greeted **Carl Jefferson**, of the **Shipping Board's fuel conservation committee**, to hear his talk on results of tests so far made. The meeting was held in New York City.

A bureau has been opened in the Municipal Building, New York City, for the **receipt of donations** of clothing, food and money for the miners of Somerset County, Pa., who are on strike. The establishment of the bureau is the result of the investigation made by the committee appointed by Mayor Hylan to investigate the living conditions of the miners employed by the Berwind-White Coal Mining Co.

Screened bituminous coal is rapidly gaining favor in the East as a substitute for anthracite. Markets in New York, New Jersey and New England are absorbing more of this fuel. Induced by the growing demand, many producers are now installing screening plants to meet the emergency and serious and permanent inroads on anthracite consuming strongholds seem likely. **The Pennsylvania Coal & Coke Co.** is shipping nut size to this section and among other pioneers who have made provision to produce and handle domestic sizes are: **J. H. Weaver & Co., Brothers Valley Coal Co.,** and **Shawnee Coal Co.**

OHIO

A number of coal operating concerns have been chartered in Ohio recently, showing considerable development in mining operations in various fields. Among the new companies are: **The Hardwidge Coal Co.,** St. Clairsville, capital, $35,000, to mine in the eastern Ohio field, incorporators, L. Z. Hawbacker, Allegra Gray, Cora B. Burdette, W. J. Walker and W. S. Norris. **The Wykega Coal Co.,** Cadiz, capital, $40,000, J. P. Liggett, Nancy W. Miller, Ruth M. Victoreen, W. E. Miller and Charles J. Victoreen. **The Uhrichsville Coal Co.,** Uhrichsville, capital, $50,000. R. D. Lloyd, Edward D. Lucas, M. H. Hurrah, P. F. Reed and Fred Anthony. **The Guardian Coal Co.,** of Mentor, capital, 500 shares, no par value designated, H. S. Donaldson, Harry S. Brady, E. Zalad, Charles W. Pattison and L. S. Sobel. **The Brady Tucker Coal Co.,** Cincinnati, capital $50,000, Lawrence E. Tucker, Jacob L. Brady, Stuart R. Ducker, Ben Brady and S. Delbridge.

The Cassady-Salyards Coal Co., Ironton, has been chartered with a capital of $10,000 to mine and sell coal by Richard Cassady, Racheal R. Cassady and others.

Seven hundred miners employed at the Webb mine of the **Cambria Collieries** near Bellaire, **went on strike as the result of a derailment in the mine in which several carloads of coal were upset.** The miners claim that the company declined to compensate them for the coal which was spilled in the mine and when that was learned they walked out and refused to do any more work until the difference between them and the company were adjusted at a conference.

Four new coal offices have been opened in Cincinnati in the past ten days, as follows: **The Calder Coal Co.,** representing West Virginia interests, in the First National Bank Building; the **Co-Operative Coal Co.,** a branch of a Bluefield organization in the Dixie Terminal Building; the **Hughes Coal Co.,** in the Pickering Building, and the **Valley Coal Co.,** a branch of the Milwaukee concern of the same name.

President Tom Morgan, of the Cincinnati Coal Exchange and sales manager for the Webb Fuel Co., is at French Lick Springs, Ind., recuperating from an attack of rheumatism. This is the third time that his old enemy has routed the colonel this year.

With the destruction of four steamers at Cincinnati, on Nov. 4, by fire, causing loss of $250,000, the Ohio River suffers further depletion of equipment for handling freight. Heavy losses have been sustained by fire and ice the past few years, and rebuilding has been slow.

Elmore Manning, for eight years with the Harlan Coal Co., has resigned and gone with the **Pittsburgh & Ohio Mining Co.,** of Cleveland, as manager of the Cincinnati office. Mr. Manning has lately been in charge of the Cincinnati office of the Harlan Coal Co., after having looked after the sales manager's desk at Louisville for some months, following resignation of the former sales manager.

More than 9,000,000 tons of coal have been delivered at **Lake Erie ports and dumped since Sept.** 1, the approximate date of the settlement of the miners' strike; this is at the rate of 1,000,000 a week. Under the program agreed upon, the roads were to deliver 1,000,000 tons a week at Lake Erie ports, which would mean delivery of 11,000,000 tons from Sept. 1 until the end of the Lake season.

An artificial rise in the Ohio River, created by United States Government officers, November 9 started on a journey toward Cincinnati 11 towboats with more than 80,000 tons of Kanawha River coal. The water for the rise was taken from pools above Dam 26 at Point Pleasant.

The Consolidated Collieries Co., at Toledo, has changed its name to the **Maumee Collieries Co.**

Harry A. Faught was arrested on a charge of embezzlement of $2,000 from the **Peerless Coal Co.,** of Cincinnati, on a warrant sworn to by Robert A. Taft as attorney for Receiver Joseph A. O'Hara. The Peerless company was forced into receivership by bills owing to the **Johns Run Coal Co., Nat Sewell,** of East Bernstadt, and **J. W. Hughes,** of Barbourville, Ky. Faught claims that the money was due him for salary which he had only drawn piecemeal in the eight months' existence of the company.

Rush Meadows, who floated the **Mohio Coal Co.** and the **Big Mandy Coal Co.,** of Cincinnati, has been arrested on a charge of breaking the blue sky laws of Ohio. Both corporations caught several of the Kentucky and West Virginia shippers of coal and were forced into receivership. It appears also that the stockholders have been caught and are intent upon prosecution.

The Brady-Tucker Coal Co. opened offices on the sixth floor of the Dixie Terminal Bldg., Cincinnati, last week. Jake Brady, the head of the corporation, was formerly general sales agent for Jewett Bigelow & Brooks. Ben Tucker, previously was with the Central Fuel Co.

Roy Heyser, who has been the buyer of coal for the Semet-Solvay Co., at Cincinnati, Huntington and Ashland, has been transferred to the Syracuse offices of the company. The Cincinnati office will be closed.

C. C. Berry, New River operator, **Maj. E. L. Helborn** of Middlesboro, Ky., **Cliff Lozier,** of the Elkhorn Piney Coal Co., Huntington, **John Moore,** of the Ivy Branch Coal Co., and **Hugh Wilson,** president of the Norfolk & Chesapeake Coal Co., were recent visitors to the Cincinnati market.

President A. J. Dalton, of the Main Island Creek Coal Company, with headquarters at Omar, W. Va., was a visitor at Cincinnati a few days ago.

P. C. Kelleher, auditor for the Carbon Fuel Co. of Charleston and Cincinnati was presented with an umbrella by the Cincinnati office force and a substantial reminder by the officers of the company when he severed an association that has existed since 1905. Mr. Kelleher will retire from business and intends to remove from Cincinnati to Detroit.

Appeals from the judgment of United States District Judge Sater, Columbus, directing a verdict in favor of the defendants in the suit of **O. F. Hardesty,** Morgantown, W. Va., doing business as Hartford Realty Co., Hartford, W. Va., against the **Martin Ebersbach Co.** and the **Peacock Coal Co.,** Pomeroy, for recovery of $250,000, with interest from May 18, 1920, alleged to be due as commission on the sale of the defendant companies' coal mines and property in Coal Mining Co. for $2,050,000, has been Meigs County, Ohio, to the Great Lakes filed in United States District Court by Hardesty.

PENNSYLVANIA

Shipments of anthracite for October, as reported to the Anthracite Bureau of Information, Philadelphia, amounted to 6,567,928 tons, as compared with 5,872,783 tons during the corresponding month last year, an increase of 695,145 tons. Shipments by originating carriers were as follows:

	October, 1922	October, 1921
P. & R. Ry.	1,266,092	1,104,828
L. V. R. R.	1,166,195	1,048,996
C. R. R. of N. J.	617,668	570,189
D. L. & W. R. R.	936,375	759,492
D. & H. Co.	828,216	898,376
Penna. R. R.	579,306	492,632
Erie R. R.	701,270	618,034
N. Y. O. & W. Ry.	179,865	126,925
L. & N. E. R. R.	292,941	253,311
Total	6,567,928	5,872,783

The Diamond Drilling & Exploration Co. has moved from DuBois to Pittsburgh.

The success of the **employees' stock purchase plan** adopted in December, 1920, has induced the **Lehigh Coal & Navigation Co.** again to offer to employees of that company, as well as the employees of affiliated companies—Alliance Coal Mining Co., Cranberry Creek Coal Co., and Panther Valley Water Co.—the opportunity to subscribe for stock under terms and conditions exceptionally favorable. A clearly written leaflet explaining in detail the terms and conditions of the offer, has been addressed to the employees and contains subscription blank which can be detached and forwarded to the paymaster. The total number of shares offered in 1920 was 2,500, the present offering being 2,000 shares. This total may be increased if subscriptions warrant.

Robert S. Baylor, Windber, for the past three years assistant superintendent of the Berwind-White Coal Co. mines in the Windber district, has been advanced to the position of superintendent.

W. H. Williams, vice-president of the Hudson Coal Co., has written Governor Sproul against the forcible seizure of 120 tons of stove coal by the citizens of the Borough of Olyphant on Nov. 5. Mr. Williams requests adequate protection from the State Police against threatened repetition of the occurrence. In a reply sent Nov. 16, Governor Sproul told the company that unless the Sheriff of Lackawanna was unable to maintain order no state assistance would be extended. A week prior to the writing of this letter the Governor had sent a telegram to the Temple Coal Co., which was charged by the School Board of Olyphant with refusing to furnish coal to the schools, and therein the Governor requested the company to furnish the coal and intimated that the force of the state would be used if necessary to keep the public schools open.

An explosion of gas in the Hoyt shaft of the Ewan colliery, **Pennsylvania Coal Co.,** last week, resulted in two mine workers being badly burned about the face and head and three others slightly burned.

Officials of the **Wentz Coal Co.** are working on plans for a new breaker at Raven Run, where the **Raven Run Coal Co.,** a subsidiary corporation, now holds title to a big tract of land which is to be extensively developed.

Bituminous coal companies recently incorporated at Harrisburg were: **Laurel Run Coal Mining Co.,** Tyrone, capital $20,000; Belle Bookhamer, Tyrone, treasurer. Purpose: Mining and shipping coal. Incorporators, Arthur V. Vanneman, Tyrone, Belle Bookhamer, Tyrone, and George J. Mazenko, Coalport. **Sloan Coal Co.,** Stroudsburg, $15,000; Harry W. Scott, treasurer, Lock No. 4. Purpose: Mining coal and manufacturing coke. Incorporators, B. C. Sloan, Cartersville;. Tom P Sloan and Henry W. Scott, Lock No. 4. **Landman Coal & Coke Co.,** Connellsville, $100,000; Murat H. Davidson, Connellsville, treasurer. Purpose: Mining coal and manufacturing coke. Incorporators, Thomas E. Davidson, Murat H. Davidson, Connellsville, and Scott E. Landman, Smithfield.

At the explosives experiment station of the Bureau of Mines at Bruceton, work is being done on the perfecting of tests to determine the sensitiveness of detonation, fire resisting qualities and water resisting qualities of explosives.

A deal has been closed whereby the **Maple Ridge Coal Co.,** of Boswell, Somerset County, becomes the property of H. S. Lohr and others. The new owners take over the entire holdings, including 40 acres of coal land, 8 acres of surface, tipples, sidings, etc. The opening is situated on the B. & O. and is completely equipped.

The Miners Mills Coal Mining Co. of Miners Mills, controlled by M. J. Healey has been reorganized and new interests affiliated. William T. Payne, and associates have taken the property over. A new breaker will be erected and other improvements made. Directors of the new company are William T. Payne, Harry B. Schooley, J. B. Blackman, Gwillym Edwards, I. R. Schumaker and M. J. Healey.

A rule requiring all mines where there is the slightest generation of dangerous gases to **equip employees with safety lamps** and to do away with all open lights in the mines, likely will be enforced in the entire Pennsylvania bituminous coal field as a result of the disaster at the Reilly No. 1, at Spangler, was intimated by **Chief Inspector Seward Button,** who is completing his investigation of the explosion which took a toll of seventy-seven lives.

A suit to recover $11,250 with interest from Jan. 1, 1913, has been brought against the **Vesta Coal Co.** by Hannah Carson, Joseph A. Carson, Annetta I. Duvall and J. Blaine Duvall, administrator of Esther Duvall, to recover 15,000 tons of coal at 25c. a ton, alleged to have been mined illegally from under the John Carson farm in East Pike Run township, Washington County. Actual value of the coal claimed to have been mined is fixed at $3,750, but triple damages are claimed, as allowed by law.

TENNESSEE

Announcement is made of the consolidation of the **Street Bros. Machine Works** and the **Patten Manufacturing Co.**, manufacturers of hoisting machinery. The charter of the Street Bros. Machine Works, Inc., will be expanded, and the products of the two companies will henceforth be manufactured and marketed by **Street Bros. Machine Works, Inc.**

UTAH

A great legal battle is expected soon in Utah following the **release under bail of the long list of coal operators** indicted by a grand jury in Salt Lake City in October, charged with conspiring to keep up the price of coal.

VIRGINIA

Norfolk domestic coal dealers who have complained to Alexander Forward, state fuel administrator, that they have been unable to obtain shipments of anthracite, have been informed by Mr. Forward that they may order direct from the mines 60 per cent of their last year's supply of this coal, and if shipments then are not forthcoming he will take up each individual case and get the shipments through.

Sale of the mines of the **Dex-Car Pocahontas Coal Co.**, at Twin Branch, W. Va., to **Henry Ford**, by the Dexter & Carpenter Co., will not interfere with that company's business in Norfolk, which is in charge of **H. T. Teagle.** The company will get supplies for its Hampton Roads trade from other sources.

WEST VIRGINIA

Matters have reached a point in the Kanawha and Logan fields where it will be necessary, according to operators, for them to ask that they be released from their agreement not to **charge more than $4.50 for prepared grades** or else be given a larger supply of cars. Mines are not working more than two days at the most and many of them not more than one day a week, and operators contend it is out of the question for them to produce prepared coal and sell it at $4.50.

The Pocahontas Fuel Co. has added to its holdings in the southern part of West Virginia by acquiring additional smokeless coal land and additional plants. It has completed negotiations for the purchase of the **Bottom Creek Coal & Coke Co.**, in which George and Samuel Patterson and others have been interested. The center of operations of the Bottom Creek company has been at Vivian. The Pocahontas company is controlled by Isaac T. Mann and associates.

Not only have the **Henry Ford interests** purchased the mining properties of Dexter & Carpenter at Twin Branch, these being among the largest shipping mines in the district, but there is also a report in circulation to the effect that the same interests **contemplate the purchase of other mining properties in Tug River District** and also the purchase outright of a large tract or tracts of mineral lands in the same district.

Pennsylvania and West Virginia coal men have launched the **B. R. & P. Coal Co.**, which is capitalized at $50,000. Headquarters will be at Fairmont. Leading figures in the new company are: James A. Berns, George Palmer, of Fayette City, Pa.; John D. Richmond, of Watson; Frank Bettegar, of Labelle, and E. C. Frame, Fairmont.

The Kellys Creek Colliery Co., Ward, is building a $70,000 amusement hall. The company is building concrete sidewalks, and expects to have the camp connected with Charleston with hard roads soon.

Refuting the statement made by Fred Mooney, secretary-treasurer of District 17, U. M. W., that martial law and the opposition of officials of the state were responsible for the failure of the strike in Mingo County, **George Bausewine, secretary of the Williamson Coal Operators' Association** declares that the strike simply simmered out and was lost because at no time were many of the miners in the Williamson field really interested in its outcome. Less than half of the 5,000 to 6,000 miners who were working July 1, 1920, heeded the call to lay down their picks and shovels. The contempt that the radical element showed for law and order was astounding, and it was little wonder that the nation's papers reached out for the news. Soon special correspondents flooded the field. Then the union, ever alert to the power of publicity, sent in its propagandists. The tent colonies provided the "sob story" that sold the strike to the sympathetic and brought golden tears from sympathizers in New York, Boston, Baltimore and elsewhere in the East.

The E. E. White Coal Co. has awarded the contract for the construction of a modern steel tipple at its plant at Glen White. During the work of constructing the new tipple there will be a minimum loss in connection with present operations.

The fire which broke out several weeks ago in the mine of **the Anchor Coal Co.**, at High Coal, has been extinguished and it has been possible to resume operations on the usual scale. The fire when discovered was isolated, under the direction of inspectors of the department of mines, by building four concrete stoppings.

A temporary injunction has been granted to the **Nuttallburg Mining Co.**, in which Henry Ford has a controlling interest against the **Maryland-New River Co.**, which operates adjoining the Nuttallburg mine. The purpose of the injunction is to restrain the defendant company from removing certain barriers which it is claimed will cause the flooring of the Nuttallburg mine. It is stated that the Maryland company's work has been undertaken with a view to draining the flooded Rosedale section of its mine.

More coal was loaded in the Logan field during the first ten months of 1922 than during any similar period in the history of the region, the total reaching 11,103,450 tons. The previous high-water mark had been reached last year when 10,607,110 tons were loaded between Jan. 1 and Oct. 31. Under conditions such as prevailed during the first six months of the year, it would have been possible, it is believed, to have reached a total of 15,000,000 tons during the year. Under conditions now prevailing, it is believed that the total output of the field will reach 13,000,000 tons.

Litigation pending in the courts for five years between Alex R. Watson of Fairmont and the **Buckhannon River Coal Co.**, a Uniontown, Pa., concern operating at Adrian, has been settled by a decision awarding $25,244.27 to Watson, for breach of contract. The plaintiff contracted with the defendant company in 1916 for 50,000 tons at 95c. a ton but only secured the delivery of 36,000 tons. When the price of coal began to go up and he was unable to secure the delivery of the balance he made the defendant company a proposal to accept half the profit on the 14,000 tons remaining undelivered. That proposal the defendant company rejected. The judge of the Upshur Circuit Court held that he was entitled to half of the profit made by the defendant company on the sale of 14,000 tons on a basis of $4.40 per ton.

The Blue Ridge Collieries Co., of Cincinnati has been organized as a West Virginia concern. It proposes to issue 15,000 shares without par value. **Active in** effecting an organization of this company were: N. C. Kelley, Richard M. Lambert, Lyman H. Dresbach, Calvin S. Cramer and Arthur W. Gordon, all of Cincinnati.

Action taken by the stockholders of the **Pittsburgh-Wheeling Coal Co.**, in increasing the capital stock of the company from $100,000 to $250,000 has been approved by the secretary of state and the increase made effective.

Further development of coal land in the Northern Panhandle is presaged by the organization of the **McMechen Coal Co.**, which has a capital stock of $100,000. This company will have its office at McMechen. Largely interested in the new concern are C. W. Caldabaugh, C. D. Marble, J. F. Young, Michael Freeman and E. L. Parker.

A most **successful safety meeting** was held at the Ida May mine of the **Consolidation Coal Co.** about the middle of November, over which W. J. Wolf, superintendent of the Consolidation, presided, extending to the State Department of Mines his appreciation for its co-operation in having mine inspectors assist in the safety work.

Until there is a better outlet from the western Greenbrier field of West Virginia and a better connection with the main line of the Chesapeake & Ohio development of the field in question will be materially retarded. The product is shipped over two roads, the Greenbrier & Eastern, completed about a year ago, and the Sewell Valley R.R., a switchback road. Owing to transportation difficulties, mines on the Greenbrier & Eastern are limited to an allotment of 70 cars per day. One company alone in the new field is capable of producing more than the allotment of the whole field. There is a movement on foot to have the C. & O. make a direct connection with the Greenbrier & Eastern over the Hankins survey route to Meadow River.

The Ohio County Fuel Co., of Pittsburgh, has been organized as a West Virginia corporation. Leading figures in the new company are: Horace G. Reed, Miner W. Tuttle, Horace R. Lamb and Delano Edwards of 49 Wall St.; William K. Dunbar of 50 Broadway, New York.

A number of strikers who participated in the mine riots a short time ago at Barton and Franklin were sentenced on Nov. 10 by Judge Frank G. Waganman in the circuit court at Cumberland. Francis R. Kaever, Allen Yates, James E. Miller, David A. Murphy, Edward Hansel and Douglas Truly drew sentences of six months in the house of correction for unlawful assembly. A number of others were convicted and sentenced for participation in the riot. Judge Waganman in pronouncing sentence scored those who did not appear for trial, but who incited the miners.

The Stanley Coal Co., with principal offices in Morgantown, has been incorporated by C. W. Ream and Stanley Ashby of Crelin, Md., S. A. Kendall, Jr., and John W. Kendall, Meyersdale, and J. L. Kendall, Jr., Pittsburg, with an authorized capital of $100,000 to operate in Monongalia County.

CANADA

F. W. Osborne, representing the Yorkshire Trust Co., Vancouver, and A. C. Garde, mining engineer of Prince Rupert, are **investigating the results of the diamond drilling** operations, which were done by order of the court on the coal areas in the Copper River district, owned by the **defunct National Finance Co. of Vancouver**, with a view to obtaining an order from the court to renew the operations in the spring. The coal areas are said to be the best single asset of the defunct company. Last spring an expenditure of $40,000 in exploration work was ordered.

The U. M. W. will attempt to invade the northern Alberta field, which in the past has been an entirely open-shop district. A mass meeting was held at Edmonton on Nov. 12. Operators are showing no particular alarm over the movement. They state that the miners are well paid, are assured of constant employment, and are contented, and they have no fear that the movement will succeed.

Prof. F. A. Thompson, of the Idaho School of Mines represented the **American Mining Congress** at a meeting of the British Columbia Division of the Canadian Institute of Mining and Metallurgy, Nov. 15-18.

According to a report issued by the **Dominion Bureau of Statistics**, the total **number of coal mines in Canada in 1921** was 396, the aggregate length of the underground workings, 1,433,331 ft. The total capital investment was $176,991,495 and the output was 15,057,493 net tons of the value of $72,451,650. The total average number of employees was 30,222, who received in wages $42,758,000. The number of days worked was 6,898,729, or an average of 228 days for each man, making the average wage rate $6.20 per day. Salaried employees, numbering 1,626, received a total of $3,717,238 and miscellaneous operating expenses, including royalties and taxes, amounted to $18,221,563.

The Dominion Bureau of Statistics has issued a summary of **imports and exports during the first ten months of the year**, as given below. Imports from Great Britain show heavy increases as compared with recent years.

CANADIAN EXPORTS AND IMPORTS

	1st ten mos. 1922	3-yr. average 1919-20-21
Anthracite imports	1,661,636	4,038,644
Bituminous imports	7,340,050	11,473,372
Coal exports	1,483,383	1,835,872

Alexander Dick has been appointed as general manager of coal sales and **E. P. Merrill** as general manager of steel sales by the **British Empire Steel Corporation.** Mr. Dick was general sales agent of the Dominion Coal Co., the coal producing subsidiary of the Steel Corporation, until the formation of the latter company, when he became its acting coal sales chief. Mr. Merrill for the past three years has been general manager of the Dominion Steel Corporation at Sydney.

The first cargo of hard coal for the use of Port Arthur this season has arrived at that port via the steamer Pioneer, with 3,600 tons of coal from Buffalo, consigned to the Walsh Coal Co.

WASHINGTON, D. C.

Coal Dust Explosion Tests in Experimental Mine, 1913-1918, an exhaustive report by Rice, Jones, Egy and Greenwald, of the Bureau of Mines staff has just become available for distribution. In the opinion of E. A. Holbrook, who as the assistant director of the Bureau of Mines, approved the manuscript, it is an unusual report of a most valuable character. Director Bain, of the Bureau of Mines, declares that it will bring great credit to American investigators.

Association Activities

Clarksburg Coal Club

Members of the coal club at their meeting about the middle of November were given assurance of a 35 per cent car supply from the B. & O. at least insofar as shipments to the Lakes were concerned. Assurance of what might be expected from the railroad company was contained in a brief statement made to the club by its chairman, Hugh G. Smith, who also made a report on car supply conditions in general.

It developed during the meeting that, although operators in many parts of West Virginia had been receiving an ample supply of cars for Lake shipment, yet there had been an acute shortage in northern West Virginia, supplied by the B. & O., even for Lake coal.

Monongahela Coal Association

Believing that the association had a function of value to perform for its own members, at a meeting held in Morgantown about the middle of November, a decision was reached to continue the work of the organization. There had been a report in circulation to the effect that the association would be disbanded, but such a report has been set at rest by the program of activity mapped out at the Morgantown meeting.

The meeting was presided over by W. E. Watson, head of the association, and he was named as its representative at the conference in Chicago between operators and miners.

The association is in a flourishing condition, according to a statement made by its president, with more evidence of co-operation than at any time in its history. The association was launched about the time the miners' strike was called and many of its members operated their mines on a non-union basis until after the signing of the Cleveland agreement.

West Virginia Coal Association

The association at a meeting in Huntington gave its attention to the question of a better car supply for the state. Though disclaiming any antagonistic attitude toward the railroads of the state, members expressed the opinion that the car supply available was far from satisfactory and was less than that to which the operators were entitled in comparison with other states. The question of a car supply was dealt with in a report submitted to the meeting by Secretary W. H. Cunningham.

The report submitted by Secretary Cunningham was accorded the endorsement of the association which went on record as deploring the present car shortage and as desiring to take whatever steps necessary to correct it. In accordance with the views of members of the association, special committees were designated to make a survey of conditions in the various fields and to ascertain exact conditions so that the matter might be presented to the proper agencies for correction. Practically all the bituminous fields of the state were represented.

Publications Received

Annual Report of Coal Mine Inspection and Mine Rescue Departments of Kansas, 1921; by James Sherwood, Mine Inspector. Pp. 158; 6 x 9 in.; tables.

Operation and Maintenance of Electrical Equipment Approved for Permissibility by the Bureau of Mines; by L. C. Ilsley, Bureau of Mines, Washington, D. C. Technical Paper 306. Pp. 23; 6 x 9 in.; illustrated.

A Study of Air-Steam Mixtures, by Leroy A. Wilson, with Charles Russ Richards, Engineering Experiment Station, University of Illinois, Urbana, Ill. Bulletin No. 131. Pp. 96; 6 x 9 in.; charts, tables and illustrations. Price, 75c. Treats of the subject of air-steam mixtures in considerable detail both by means of theoretical discussion and by reporting actual tests made with different proportions of air and steam at different initial air temperatures and under various load conditions. The Mollier charts which accompany the bulletin greatly simplify the solutions of the problems.

Coke Oven Accidents in the United States, During the Calendar Year 1921; by William W. Adams, Bureau of Mines, Washington, D. C. Technical Paper 318. Pp. 34; 6 x 9 in.; tables.

Annual Report of the Department of Mines of West Virginia for the Fiscal Year Ending June 30, 1921; by R. M. Lambie, Chief of Department of Mines. Pp. 414; 6 x 9 in.; tables. In two sections.

Report of the State Mine Inspectors of Iowa for the Biennial Period Ending Dec. 31, 1921; by W. E. Holland, R. T. Rhys, Edward Sweeney and L. E. Stamm. Pp. 56; 6 x 9 in.; tables.

Coal Statistics for Canada for the Calendar Years 1919, 1920 and 1921. Dominion Bureau of Statistics, Mining, Metallurgical and Chemical Branch, Ottawa, Canada. Pp. 115; 6 x 9 in.; tables. Covers coal consumption, production, exports, imports, number of employees, etc. This report is issued in continuance of the series of annual reports previously published by the Department of Mines on the production of coal and coke in Canada.

Obituary

C. G. Blake, president of the C. G. Blake Coal Co., pioneer shippers and agents for New River coals, died at his residence in Cincinnati on Nov. 9. Mr. Blake was born in Terre Haute, Ind., seventy-five years ago and came to Cincinnati in 1870, where he engaged in the pig-iron business. In 1886 he disposed of his holding in that trade and entered the coal business with Richard and Frank Ellison. A second incorporation of the firm under its present style admitted R. A. Colter, one of the leading figures in Cincinnati's coal trade. Mr. Blake took pleasure in recounting the fact that he was one of the first persons to ship New River coal west. With the growing importance of that field his company expanded and became large handlers and shippers of coal to foreign ports. Mr. Blake laid much of the ground work for this enterprise himself.

Col. Jay H. Northup is dead of paralysis at Louisa, Ky. He was long active in coal, lumber and railroad industries. He opened the Big Sandy region to capital and later founded a model farm. He was a lieutenant in the Union Army.

Traffic News

The Pittsburgh & West Virginia Ry. Co. and eighteen coal operators whose mines are located on that road, have filed a complaint with the I. C. C. asking that a **physical connection at Hopedale, Ohio,** between that road and the **Alliance Division of the New York Central,** be made mandatory. Recently, due to lack of power and other adverse operating conditions, the P. & W. V. is said to have been utterly incapable of handling the volume of traffic offered it. The New York Central has declined to make the connection voluntarily on the ground that traffic is not sufficient to justify the expenditure, not only of the connection but of the enlargement of terminal and dumping facilities which the increase in traffic would necessitate. It is alleged that the New York Central also is fearful that it would be short-hauled on Pittsburgh merchandise traffic.

In the complaint of the **Jeddo-Highland Coal Co.** an examiner recommends that rates on unprepared run of mine and culm coal from mines and culm banks of the Lehigh Valley R.R. in the Lehigh region of Pennsylvania to breakers in this region for preparation and re-forwarding by that road during federal control, were unreasonable because they exceeded those established Aug. 30, 1918.

A proposed report by Examiner A. S. Worthington, of the I. C. C. in the case of the **Kanawha Black Band Coal Co.,** vs. the **Chesapeake & Ohio Ry. Co.,** finds rates on coal in carloads from certain mines on the Kanawha Central to interstate destinations on the C. & O. and its connections are unreasonable and unduly prejudicial. Reasonable and non-prejudicial rates are prescribed for the future.

Recent meetings of operators in West Virginia held for the purpose of **securing some relief from car shortages** and other transportation handicaps led to a general conference of representatives of the various coal fields of the state and executives of the C. & O., at Huntington. The conference was held specifically for the purpose of discussing the question of car supply on the main and branch lines of the road.

Headway was made toward a better understanding between the railroad and the operators. It was pointed out by the road officials that every effort was being made to get motive power and coal-carrying equipment in better shape.

Wyoming's railroad mileage is about to be reduced twelve miles. The branch line from Lost Springs to the Rosin coal mine, twelve miles distant, is to be scrapped by the Chicago & Northwestern.

As a result of a ruling by the railroad commission of Wisconsin, a **reduction of 10c. a ton** on freight charges on soft coal **from Milwaukee and Sheboygan to Oshkosh, Wis.,** has been made. Formerly the rate was $1.20 per ton.

A reduction of 10 per cent in the short-haul intrastate coal rate has been ordered by the **Indiana Public Service Commission.** The short-haul rates affected are all hauls of 30 miles or under. The reduction goes into effect Dec. 1. The reductions ordered affected certain classes of rates that were not decreased in the general freight rate reductions of a few months ago and will now bring these classes down to the level of the rest of the freight rates on coal. The case was pressed by the **Indiana State Chamber of Commerce.**

At a recent meeting of the **Monongahela Valley Association** the question discussed had to do with reference to the recommendation of a representative of the I. C. C. that the minimum local rate for moving coal in West Virginia should be 84c. instead of 64c., the present rate. The decision reached as a result of such discussion was that each chamber of commerce in the Monongahela Valley should file an intervening petition with the I. C. C. and that the association on its own part should also file an intervening petition so that the association may be a party to the hearing to be held in Pittsburgh on Dec. 4.

Trade Literature

Solid Bronze Centrifugal Mine Pumps. Allis-Chalmers Mfg. Co., Milwaukee, Wis. Leaflet No. 2060. Four-page folder, illustrated. These pumps are particularly designed to resist the acidulous and erosive action of mine water.

Supplies and Equipment for Coal Mines. Cooke-Wilson Electric Supply Co., Charleston, Pittsburgh and Athens. Catalog No. 4. Pp. 381; 6 x 9 in.; illus. Covers a wide range of electrical supplies for coal mines and contains a fund of useful information.

New Marion Model 21. The Marion Steam Shovel Co., Marion, Ohio. Pp. 8; 9 x 12 in.; illustrated. One of the important features incorporated in this new shovel is a new and novel type of rigid crawler trucks.

The Coxe Stoker. Combustion Engineering Corp., New York City. Bulletin CB1. Pp. 24; 8 x 11 in.; illustrated. Describes the performance of this stoker on Western and Midwestern bituminous coals. The tests recorded will be of interest to the engineering world.

R. D. Nuttall Co., Pittsburgh, Pa., has issued a new booklet No. 36 containing a **series of charts on gear design,** also bulletin No. 34 on **industrial helical gears.**

Padley & Venables, Ltd., Sheffield, England, List B, Section 2, describing the Hollow and Solid Rock Drills, and List B, Section 3 on **Coal Cutter Picks.**

The Combustion Engineering Corp. of New York City has published a booklet entitled **"Service,"** by John Van Brunt. It gives the stoker manufacturer's standpoint on the subject of service.

Coming Meetings

The Illinois Mining Institute will hold its next meeting Dec. 1 and 2 at the Illinois Union Bldg., cor. Wright and John St., Champaign, Ill. Secretary, Martin Bolt, Springfield, Ill.

West Virginia Coal Mining Institute's annual meeting will be held Dec. 5 and 6, at Huntington, W. Va. Secretary, R. E. Sherwood, Kanawha Bank Bldg., Charleston, W. Va.

Coal Mining Institute of America will meet Dec. 13, 14 and 15 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., 911 Chamber of Commerce Bldg., Pittsburgh, Pa.

National Exposition of Power and Mechanical Engineering will be held at the Grand Central Palace, New York City, Dec. 7-13. Manager, Charles F. Roth, Grand Central Palace, New York City.